



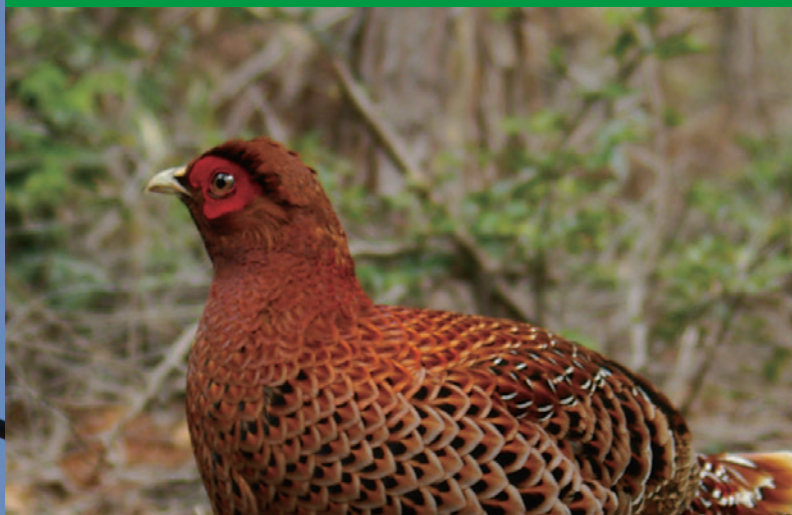
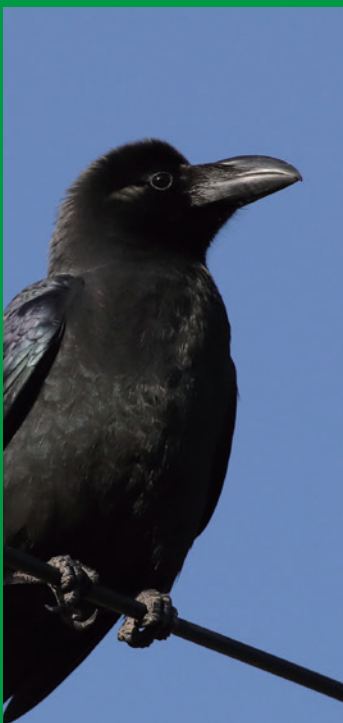
The Report of the Japan Breeding Bird Atlas

Mapping the present status of Japanese birds

2016-2021



bird-atlas.jp



Report of the Japan Breeding Bird Atlas
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Contents

<p>Summary of Survey Results 1</p> <p>Survey System 3</p> <p>Methods 3</p> <p>Survey Results 6</p> <p style="padding-left: 20px;">How to Use the Map Page 6</p> <p style="padding-left: 20px;">Hazel Grouse 7</p> <p style="padding-left: 20px;">Rock Ptarmigan 8</p> <p style="padding-left: 20px;">Japanese Quail 9</p> <p style="padding-left: 20px;">Copper Pheasant 10</p> <p style="padding-left: 20px;">Green Pheasant 11</p> <p style="padding-left: 20px;">Mandarin Duck 12</p> <p style="padding-left: 20px;">Gadwall 13</p> <p style="padding-left: 20px;">Falcated Duck 14</p> <p style="padding-left: 20px;">Mallard 15</p> <p style="padding-left: 20px;">Eastern Spot-billed Duck 16</p> <p style="padding-left: 20px;">Northern Shoveler 17</p> <p style="padding-left: 20px;">Garganey 18</p> <p style="padding-left: 20px;">Eurasian Teal 19</p> <p style="padding-left: 20px;">Common Pochard 20</p> <p style="padding-left: 20px;">Tufted Duck 21</p> <p style="padding-left: 20px;">Harlequin Duck 22</p> <p style="padding-left: 20px;">Smew 23</p> <p style="padding-left: 20px;">Common Merganser 24</p> <p style="padding-left: 20px;">Little Grebe 25</p> <p style="padding-left: 20px;">Red-necked Grebe 26</p> <p style="padding-left: 20px;">Great Crested Grebe 27</p> <p style="padding-left: 20px;">Red-tailed Tropicbird 28</p> <p style="padding-left: 20px;">White-tailed Tropicbird 29</p> <p style="padding-left: 20px;">Japanese Wood Pigeon 30</p> <p style="padding-left: 20px;">Oriental Turtle Dove 31</p> <p style="padding-left: 20px;">Common Emerald Dove 32</p> <p style="padding-left: 20px;">White-bellied Green Pigeon 33</p> <p style="padding-left: 20px;">Whistling Green Pigeon 34</p> <p style="padding-left: 20px;">Black-footed Albatross 35</p> <p style="padding-left: 20px;">Laysan albatross 36</p> <p style="padding-left: 20px;">Short-tailed Albatross 37</p> <p style="padding-left: 20px;">Bonin Petrel 38</p> <p style="padding-left: 20px;">Streaked Shearwater 39</p> <p style="padding-left: 20px;">Wedge-tailed Shearwater 40</p> <p style="padding-left: 20px;">Audubon's Shearwater 41</p> <p style="padding-left: 20px;">Bulwer's Petrel 42</p> <p style="padding-left: 20px;">Band-rumped Storm Petrel 43</p> <p style="padding-left: 20px;">Swinhoe's Storm Petrel 44</p> <p style="padding-left: 20px;">Leach's Storm Petrel 45</p> <p style="padding-left: 20px;">Tristram's Storm Petrel 46</p> <p style="padding-left: 20px;">Oriental Stork 47</p> <p style="padding-left: 20px;">Red-footed Booby 48</p> <p style="padding-left: 20px;">Brown Booby 49</p> <p style="padding-left: 20px;">Pelagic Cormorant 50</p> <p style="padding-left: 20px;">Red-faced Cormorant 51</p> <p style="padding-left: 20px;">Great Cormorant 52</p> <p style="padding-left: 20px;">Japanese Cormorant 53</p> <p style="padding-left: 20px;">Eurasian Bittern 54</p> <p style="padding-left: 20px;">Yellow Bittern 55</p> <p style="padding-left: 20px;">Von Schrenck's Bittern 56</p> <p style="padding-left: 20px;">Cinnamon Bittern 57</p> <p style="padding-left: 20px;">Japanese Night Heron 58</p> <p style="padding-left: 20px;">Malaysian Night Heron 59</p> <p style="padding-left: 20px;">Black-crowned Night Heron 60</p> <p style="padding-left: 20px;">Striated Heron 61</p> <p style="padding-left: 20px;">Chinese Pond Heron 62</p> <p style="padding-left: 20px;">Eastern Cattle Egret 63</p> <p style="padding-left: 20px;">Grey Heron 64</p> <p style="padding-left: 20px;">Purple Heron 65</p> <p style="padding-left: 20px;">Great Egret 66</p>	<p>Intermediate Egret 67</p> <p>Little Egret 68</p> <p>Pacific Reef Heron 69</p> <p>Crested Ibis 70</p> <p>Red-crowned Crane 71</p> <p>Swinhoe's Rail 72</p> <p>Slaty-legged Crake 73</p> <p>Okinawa Rail 74</p> <p>Water Rail 75</p> <p>White-breasted Waterhen 76</p> <p>Baillon's Crake 77</p> <p>Ruddy-breasted Crake 78</p> <p>Common Moorhen 79</p> <p>Eurasian Coot 80</p> <p>Asian Koels 81</p> <p>Hodgson's Hawk-cuckoo 82</p> <p>Lesser Cuckoo 83</p> <p>Indian Cuckoo 84</p> <p>Oriental Cuckoo 85</p> <p>Common Cuckoo 86</p> <p>Grey Nightjar 87</p> <p>White-throated Needletail 88</p> <p>Pacific Swift 89</p> <p>House Swift 90</p> <p>Northern Lapwing 91</p> <p>Grey-headed Lapwing 92</p> <p>Long-billed Plover 93</p> <p>Little Ringed Plover 94</p> <p>Kentish Plover 95</p> <p>Black-winged Stilt 96</p> <p>Eurasian Woodcock 97</p> <p>Amami Woodcock 98</p> <p>Latham's Snipe 99</p> <p>Common Redshank 100</p> <p>Common Sandpiper 101</p> <p>Greater Painted-snipe 102</p> <p>Barred Buttonquail 103</p> <p>Oriental Pratincole 104</p> <p>Brown Noddy 105</p> <p>Black Noddy 106</p> <p>Black-tailed Gull 107</p> <p>Slaty-backed Gull 108</p> <p>Greater Crested Tern 109</p> <p>Little Tern 110</p> <p>Bridled Tern 111</p> <p>Sooty Tern 112</p> <p>Roseate Tern 113</p> <p>Black-naped Tern 114</p> <p>Common Tern 115</p> <p>Common Murre 116</p> <p>Spectacled Guillemot 117</p> <p>Ancient Murrelet 118</p> <p>Japanese Murrelet 119</p> <p>Rhinoceros Auklet 120</p> <p>Tufted Puffin 121</p> <p>Western Osprey 122</p> <p>Crested Honey Buzzard 123</p> <p>Black-winged Kite 124</p> <p>Black Kite 125</p> <p>White-tailed Eagle 126</p> <p>Crested Serpent Eagle 127</p> <p>Eastern Marsh Harrier 128</p> <p>Japanese Sparrowhawk 129</p> <p>Eurasian Sparrowhawk 130</p> <p>Northern Goshawk 131</p> <p>Grey-faced Buzzard 132</p> <p>Eastern Buzzard 133</p>	<p>Mountain Hawk-Eagle 134</p> <p>Japanese Scops Owl 135</p> <p>Oriental Scops Owl 136</p> <p>Ryukyu Scops Owl 137</p> <p>Ural Owl 138</p> <p>Northern Boobook 139</p> <p>Long-eared Owl 140</p> <p>Short-eared Owl 141</p> <p>Ruddy Kingfisher 142</p> <p>Common Kingfisher 143</p> <p>Crested Kingfisher 144</p> <p>Oriental Dollarbird 145</p> <p>Eurasian Wryneck 146</p> <p>Japanese Pygmy Woodpecker 147</p> <p>Lesser Spotted Woodpecker 148</p> <p>White-backed Woodpecker 149</p> <p>Great Spotted Woodpecker 150</p> <p>Black Woodpecker 151</p> <p>Japanese Green Woodpecker 152</p> <p>Grey-headed Woodpecker 153</p> <p>Okinawa Woodpecker 154</p> <p>Common Kestrel 155</p> <p>Eurasian Hobby 156</p> <p>Peregrine Falcon 157</p> <p>Fairy Pitta 158</p> <p>Ashy Minivet 159</p> <p>Ryukyu Minivet 160</p> <p>Japanese Paradise Flycatcher 161</p> <p>Tiger Shrike 162</p> <p>Bull-headed Shrike 163</p> <p>Brown Shrike 164</p> <p>Eurasian Jay 165</p> <p>Lidth's Jay 166</p> <p>Azure-winged Magpie 167</p> <p>Eurasian Magpie 168</p> <p>Spotted Nutcracker 169</p> <p>Carrion Crow 170</p> <p>Large-billed Crow 171</p> <p>Goldcrest 172</p> <p>Marsh Tit 173</p> <p>Willow Tit 174</p> <p>Varied Tit 175</p> <p>Coal Tit 176</p> <p>Japanese Tit 177</p> <p>Eurasian Skylark 178</p> <p>Sand Martin 179</p> <p>Barn Swallow 180</p> <p>Pacific Swallow 181</p> <p>Red-rumped Swallow 182</p> <p>Asian House Martin 183</p> <p>Light-vented Bulbul 184</p> <p>Brown-eared Bulbul 185</p> <p>Japanese Bush Warbler 186</p> <p>Asian Stubtail 187</p> <p>Long-tailed Tit 188</p> <p>Kamchatka Leaf Warbler 189</p> <p>Japanese Leaf Warbler 190</p> <p>Sakhalin Leaf Warbler 191</p> <p>Eastern Crowned Warbler 192</p> <p>Ijima's Leaf Warbler 193</p> <p>Bonin White-eye 194</p> <p>Warbling White-eye 195</p> <p>Lanceolated Warbler 196</p> <p>Middendorff's Grasshopper Warbler 197</p> <p>Styan's Grasshopper Warbler 198</p> <p>Marsh Grassbird 199</p> <p>Gray's Grasshopper Warbler 200</p>
---	---	---

Oriental Reed Warbler	201	Red-breasted Parakeet	268
Black-browed Reed Warbler	202	Monk Parakeet	269
Zitting Cisticola	203	Taiwan Blue Magpie	270
Eurasian Nuthatch	204	Red-billed Blue Magpie	271
Eurasian Treecreeper	205	Chinese Hwamei	272
Eurasian Wren	206	Moustached Laughingthrush	273
White-cheeked Starling	207	Masked Laughingthrush	274
Chestnut-cheeked Starling	208	White-browed Laughingthrush	275
Brown Dipper	209	Red-billed Leiothrix	276
Siberian Thrush	210	Crested Myna	277
Scaly Thrush	211	Common Myna	278
Amami Thrush	212	Orange Bishop	279
Grey-backed Thrush	213	Red Avadavat	280
Japanese Thrush	214	White-rumped Munia	281
Pale Thrush	215	Scaly-breasted Munia	282
Brown-headed Thrush	216	Tricolored Munia	283
Izu Thrush	217	Chestnut Munia	284
Japanese Robin	218	White-headed Munia	285
Ryukyu Robin	219	Java Sparrow	286
Siberian Rubythroat	220	Red-crested Cardinal	287
Siberian Blue Robin	221	Current Status of Birds in Japan	288
Red-flanked Bluetail	222	Species that have Increased	290
Daurian Redstart	223	Decreased Species	291
Siberian Stonechat	224	Climate Change	294
Blue Rock Thrush	225		
Dark-sided Flycatcher	226		
Asian Brown Flycatcher	227		
Narcissus Flycatcher	228		
Blue-and-white Flycatcher	229		
Alpine Accentor	230		
Japanese Accentor	231		
Russet Sparrow	232		
Eurasian Tree Sparrow	233		
Forest Wagtail	234		
Western Yellow Wagtail	235		
Grey Wagtail	236		
White Wagtail	237		
Japanese Wagtail	238		
Olive-backed Pipit	239		
Grey-capped Greenfinch	240		
Ogasawara Greenfinch	241		
Eurasian Siskin	242		
Long-tailed Rosefinch	243		
Pine Grosbeak	244		
Red Crossbill	245		
Eurasian Bullfinch	246		
Hawfinch	247		
Chinese Grosbeak	248		
Japanese Grosbeak	249		
Meadow Bunting	250		
Chestnut-eared Bunting	251		
Yellow-throated Bunting	252		
Yellow-breasted Bunting	253		
Yellow Bunting	254		
Black-faced Bunting	255		
Grey Bunting	256		
Japanese Reed Bunting	257		
Common Reed Bunting	258		
Chinese Bamboo Partridge	259		
Indian Peafowl	260		
Northern Bobwhite	261		
Black Swan	262		
Mute Swan	263		
Rock Dove	264		
Eurasian Collared Dove	265		
Budgerigar	266		
Rose-ringed Parakeet	267		

Summary of Survey Results

The third survey of the Japan Breeding Bird Atlas program, which was started in the 1970s (first: 1974-1978) and subsequently in the 1990s (second: 1997-2002), was conducted from 2016 to 2021. 2,344 sites across Japan were surveyed with the support of 2,106 survey participants. In addition, 243,080 questionnaires were received from all over Japan. As a result, 379 species were recorded (21 of which were non-native species, introduced intentionally or unintentionally), and 278 species (plus 3 subspecies) with breeding records (or possible breeding records) in Japan, including past records, were mapped and compiled.

In Japan, recorded species diversity tended to be higher in the north, however, number of recorded individual did not show a similar trend.

The species with the highest number of recorded meshes was Japanese Bush Warbler, as in the first (1970s) and the second (1990s) surveys. In the third survey in the 2010s, Large-billed Crow and Brown-eared Bulbul followed along. In Hokkaido, in contrast to the rest of Japan, Black-faced Bunting was the most common species.

The change in the number of recorded meshes over time since the 1970s shows that Meadow Bunting, which ranked second in the first survey (1970s), has dropped in rank. Five species of open habitat (Meadow Bunting, Carrion Crow, Eurasian Tree Sparrow, Grey-capped Greenfinch, and Bull-headed Shrike) were ranked in the top ten recorded in meshes in the 1970s decreased to four in the 1990s and further decreased to three in the 2010s. The abundance of forest species, on the other hand, increased.

The most numerous bird species recorded in the 2010s survey was Brown-eared Bulbul, followed by Japanese Bush Warbler and Eurasian Tree Sparrow. Surveys in the 1990s and 2010s showed a decreasing trend in the abundance of open habitat species, such as Eurasian Tree Sparrow, Barn Swallow, and White-cheeked Starling, as well as in the number of recorded meshes.

Based on the results of 1,947 comparable field survey sites, we summarized the results of the second (1990s) and the third (2010s) surveys in terms of changes in the number of recorded sites and the total abundance of individual birds. Many forest bird species, including non-native birds such as Chinese Hwamei and Red-billed Leiothrix, increased in abundance. Also, many species of summer migrants which had been concerned as declining and Large fish-eating birds such as Great Cormorant also increased.

On the other hand, the number of recorded sites decreased for small fish-eating birds such as Little Tern and Little Egret. The total recorded numbers decreased for aerial feeders such as White-throated Needletail, Pacific Swift, and Barn Swallow, and for open habitat (including farmland) species such as Eastern Cattle Egret, Barn Swallow, White-cheeked Starling, and Eurasian Tree Sparrow. As for the species on the Red List of the Ministry of the Environment, the number of recorded sites of Brown Shrike and Little Tern decreased rapidly, while number of recorded sites of

Fairy Pitta, White-tailed Eagle, Black Woodpecker, Ashy Minivet, and Western Osprey increased remarkably. Among the species not listed on the Red List of the Ministry of the Environment, the species that showed most notable declines were Eastern Cattle Egret, Little Egret, Black-crowned Night Heron, Striated Heron, White-throated Needletail, and Common Moorhen.

The changes in the distribution of Black-faced Bunting and Olive-backed Pipit suggest that climate change may also affect the distribution of birds.

Survey System

Host organizations

Japan Bird Research Association (Main host), Wild Bird Society of Japan, NACS-J (The Nature Conservation Society of Japan), Japanese Bird Banding Association, Yamashina Institute for Ornithology and Biodiversity Center of Japan

Cooperation organizations

Gunma Museum of Natural History, National Institute for Environmental Studies, Nagano Environmental Conservation Research Institute, Fukui Nature Conservation Center and Rakuno Gakuen University

Financial support

Japan Bird Research Association Research Support Grants (2014-2016), Suntory Fund for Bird Conservation (2016-2018), Pro Natura Foundation Japan (2017), Seven-Eleven Foundation (2019-2020) and Keidanren Nature Conservation Fund (2020-2021)

Methods

The 2010s survey conducted between the fiscal years 2016 and 2021 was the third attempt at nation-wide survey of the breeding birds that was started in the 1970s (1974-1978) and subsequently in the 1990s (1997-2002).

In this study, bird data were collected through field surveys and questionnaires (literature and observation records).

(1) Field Survey

Field surveys were conducted at 2,344 sites throughout Japan (Fig. 1). Each site consisted of a survey course of about 3 km and two fixed points. Surveyors had to walk the course at a

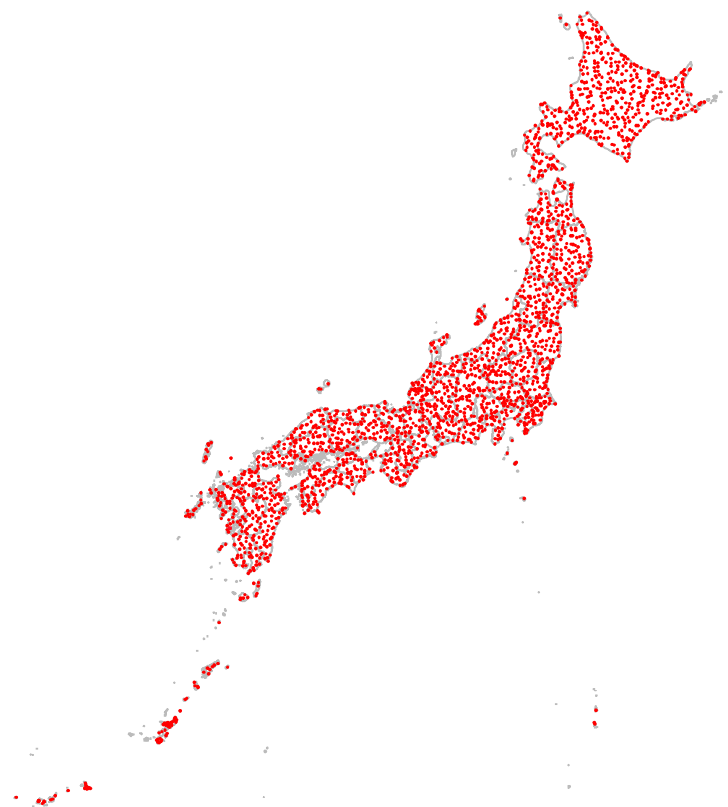


Fig. 1. Distribution of survey routes

speed of about 2 km/h and to stay at the fixed points for 30 minutes to record species and numbers of birds observed within 50m. In addition, the surveyors had to record observed behavior of birds using the "Criteria for Probability of Breeding and Judgement on Observed Behavior of Birds" (Table 1).

The survey was basically conducted on the same survey courses as those conducted in the second survey in the 1990s . However, some of the courses may have been changed or unable to use due to environmental changes about 20 years since then.

(2) Questionnaire Survey

In the questionnaires, we collected information on casual observations of species before and after the field survey days, records of observations at arbitrary points, literature information, and records registered in the bird observation database of the Japan Bird Research Association.

Making of Distribution Maps

The data from the field surveys and questionnaires were aggregated into 20 km meshes, and the smallest observation codes (high breeding ranks) were selected to make the distribution map.

Since the distribution map includes data from questionnaires, it may be affected by the differences of efforts of the information providers and may show false distribution changes. Therefore, in the comparison between the second survey in the 1990s and the current survey in the 2010s, we also made a comparison based only on the results of the field surveys. In the case of the field survey in an area where the situation of the survey course had been changed significantly, the results may reflect the change of the course rather than the actual increase or decrease of birds in the area. Therefore, we compared the results of 1,947 sites where the rate of course change was less than 25% and where we were able to survey by the standardized method.

Table 1. Judgment Criteria for Observed Behavior of Birds

Breeding rank*	Observation code	Observed behavior
On adults		
A	10	An adult bird repeatedly came in and out of a nest (the site appears to be a nest).
A	11	An adult bird was brooding (appeared to be brooding) on eggs or chicks.
A	12	Food begging calls of chicks were heard as soon as an adult bird entered the nest.
A	13	An adult bird was carrying the feces of a chick.
A	14	An adult bird carried food to nestlings (including the case that the bird was alarmed at the observer and stayed without moving with food in its bill).
A	15	An adult bird feigned injury.
B	30	The territorial song of the species (including the drumming of woodpeckers) was heard during the breeding season in a habitat where the species may nest (excluding winter or passing migrants).
B	31	An adult bird showed courtship behavior (excluding winter or passing migrants).
B	32	An adult bird showed mating behavior (excluding winter or passing migrants).
B	33	An adult bird showed threatening or alarming behavior that suggested the presence of a nest or chicks in the vicinity.
B	34	An adult bird visited the place that appears to be the nest (excluding roost sites).
B	35	An adult bird showed nest-building behavior (including nest hole digging).
B	36	An adult bird carried nest materials (only when it was building a nest in the vicinity).
B	37	An adult bird carried food for the chicks, even if the nest site is not obvious in the vicinity.
C	50	An adult bird was observed in the breeding season in suitable habitat, without other signs of breeding (including winter or passing migrants that have records of past breeding in the region).
C	51	The sound of the species was heard during the breeding season, but the sound is not confirmed to be its territorial song.
D	60	An adult bird was observed, though the habitat in the surrounding area appeared not appropriate for nesting. (e.g.) One observed swifts and eagle/hawks in the sky, but there was no nesting habitat in the vicinity.
D	61	Winter or passing migrants were observed during the breeding season that had no breeding records in the region.
On nests		
A	16	A nest used in 2016 or later was observed (in the case after chicks were fledged)
A	17	A nest with eggs was observed.
A	18	The eggshells of the species was observed in the vicinity of the nest where the adult birds were sitting calmly, in a habitat where the species could nest.
B	38	A nest without eggs or chicks was observed, no adult bird was seen to visit the nest.
On juveniles		
A	19	A nest with chicks was observed
A	20	The call of nestlings was heard.
A	21	Fledglings were observed that seemed to have moved very little from the nest.
B	39	Fledglings that seemed to be quite mobile were observed.
B	40	A family group was observed.
In bird banding or other occasions to treat birds in hand		
A	22	Adult females had eggs in their bellies.
A	23	Adult females (or males in some cases) had a prominent incubation patch (index 5) at different times during the breeding season or capturing multiple individuals with different times during the breeding season.
A	24	Juveniles had natal down or some remaining, which as yet begun to start molting into their first winter plumage.
B	41	An adult female (or a male in some cases) had a prominent incubation patch (index 5) only once during the breeding season.
B	42	An adult bird held nesting materials. Or one saw nesting materials near the captured bird.
B	43	Young birds in the process of molting into their first winter plumage.
C	52	Adult male birds that showed a pronounced protrusion of the cloaca.

*Breeding Rank

A: Breeding confirmed

B: Breeding not confirmed but likely

C: Inhabitation confirmed but status of breeding unknown

D: Seen or heard but probably not breeding

E: Inhabitation not confirmed but judging from the environment it may occur during breeding season

Survey Results

In the current survey from January 2016 to July 2021, a total of 2,106 survey participants reported their findings through field surveys or questionnaires. The field surveys were conducted at 2,344 sites nationwide. In addition, 243,080 questionnaires were received from all over Japan.

379 species of birds (including 21 non-native) were recorded. Of these, distribution for 278 species were mapped (including three localized subspecies that need to be distinguished: Ryukyu Minivet, Amami Thrush, and Ogasawara Greenfinch). Distribution maps were not prepared for Golden Eagle and Blakiston's Fish Owl for conservation concerns.

How to Use the Distribution Map Page

Horizontal distribution maps are used for the first (1974-1978), the second (1997-2002), and the third (2016-2021) surveys. Vertical distribution maps are used for the third (current) survey.

The horizontal distribution map shown below is based on all the data from the field survey and the questionnaires.

- : A breeding was confirmed.
- : B breeding was not confirmed, but probable.
- : C confirmed to occur, but the possibility of breeding is unknown.

In addition, for the third survey in the 2010s, we also reported

- : D occurrence of the species without the probability of breeding.

Although D-rank includes wintering and passing migrants (observation code 61), these data were not shown on the map because only records of foraging visits but not nesting in the environs were used in mapping (observation code 60).

The number of meshes and the number of sites identified (under categories A to C) in the second (1990s) and the current field (third) survey (based on 1,947 sites with minor course changes and no deficiencies in survey methods) are plotted.

The vertical distribution map shown used data from the field survey where the elevation of the survey site is known. Data from the questionnaires were not used for the vertical distribution map because the elevation of the observation points was not known. Therefore, some of the points in the horizontal distribution map may not match those in the vertical distribution map.

● of the distribution map indicates the distribution of the study area and ● indicates the observed points of each species.

Scan the QR code for additional information such as calls and natural history of the species (in Japanese)

Hazel Grouse

Tetrastes bonasia

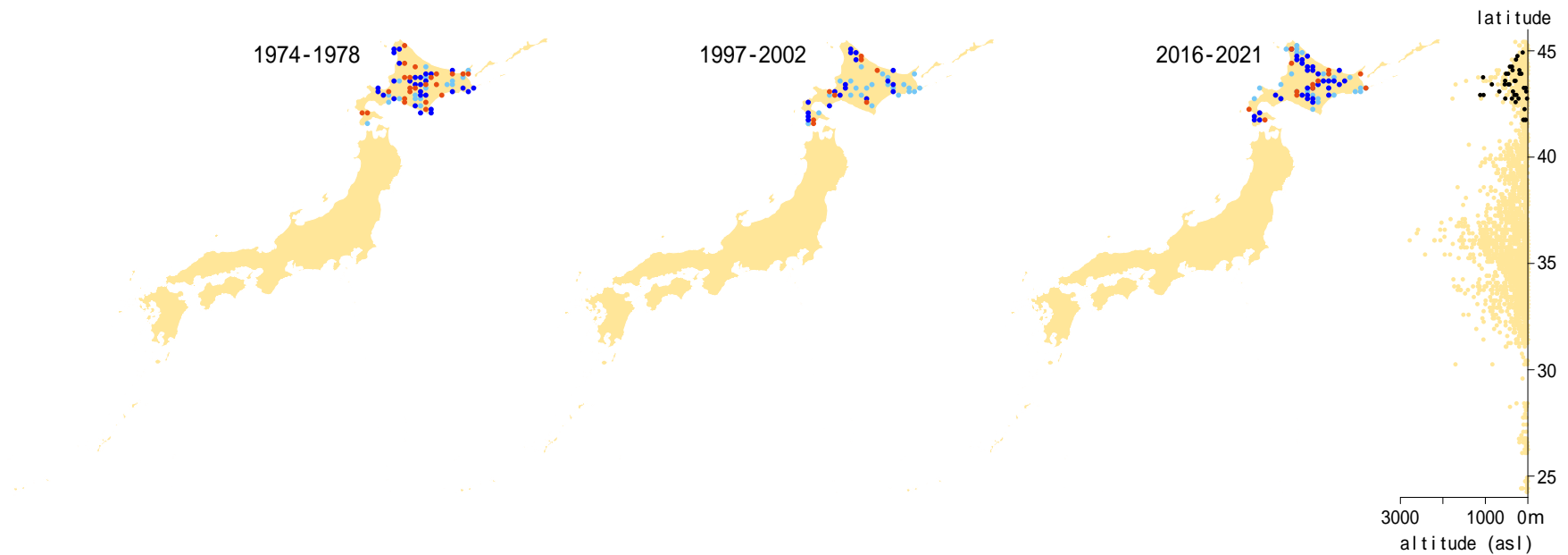
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	23	29	17
1997-2002	8	18	23
2016-2021	13	31	21

Recorded survey sites	
1997-2002	25
2016-2021	30



Altitudinal distribution
survey sites
recorded sites



Rock Ptarmigan

Lagopus muta

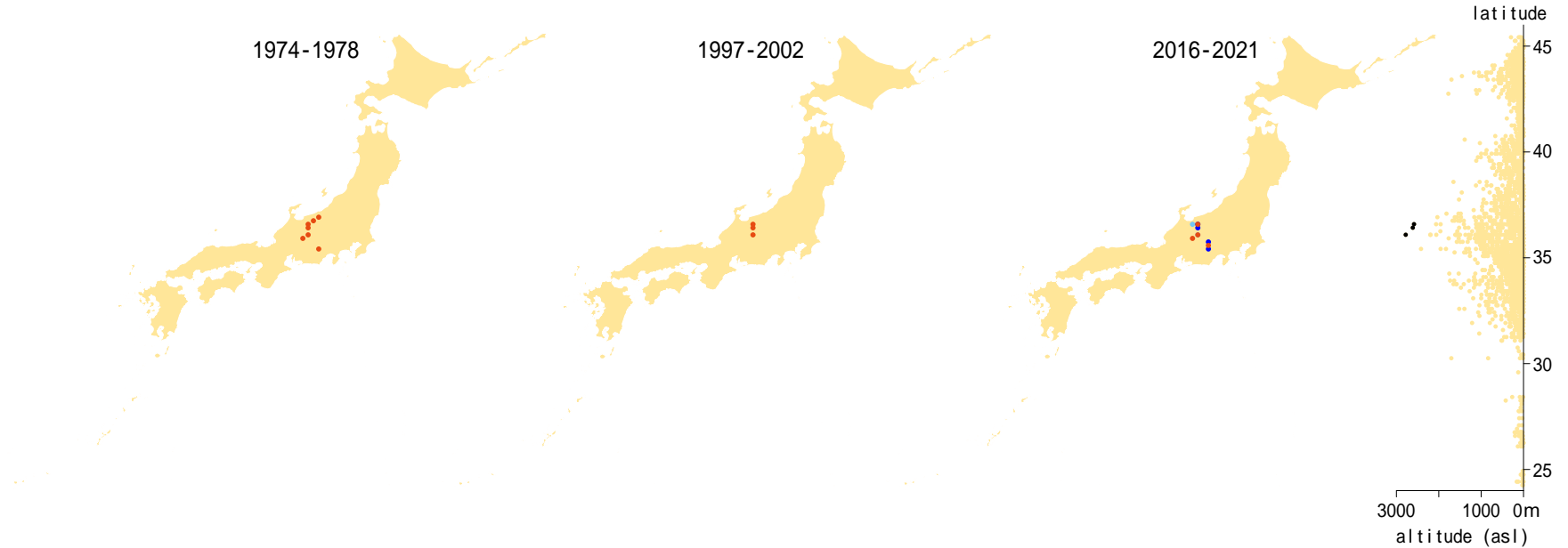
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	7	0	0
1997-2002	3	0	0
2016-2021	4	3	1

Recorded survey sites	
1997-2002	2
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



Note: a special distribution survey targeting this species was conducted in the 2010s.

Japanese Quail

Coturnix japonica

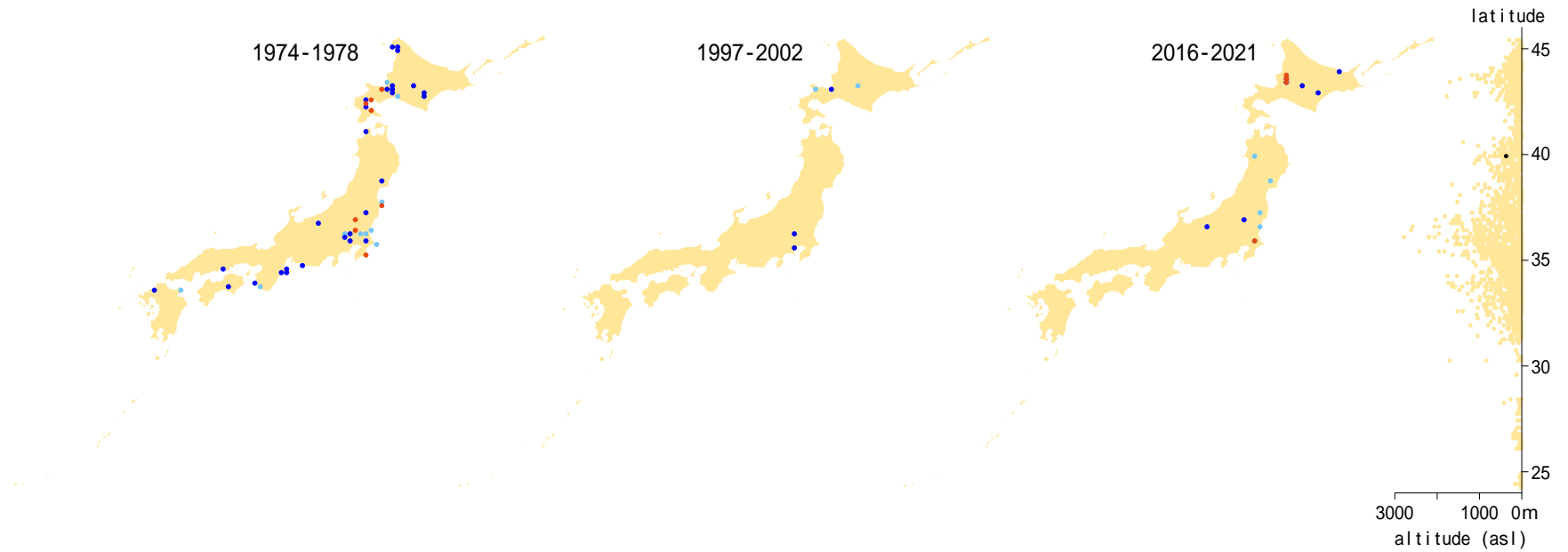
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	8	28	10
1997-2002	0	3	2
2016-2021	4	5	4

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Copper Pheasant

Syrmaticus soemmerringii

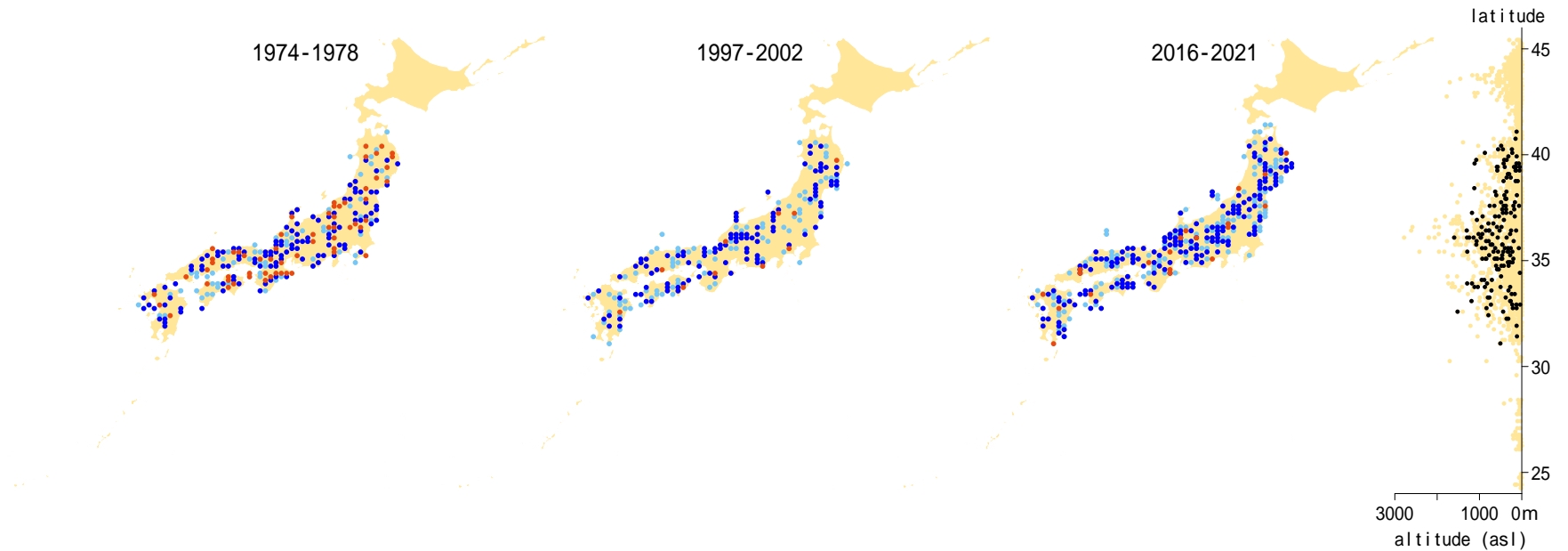
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	61	118	60
1997-2002	10	103	84
2016-2021	20	165	112

Recorded survey sites	
1997-2002	100
2016-2021	142



Altitudinal distribution
survey sites
recorded sites



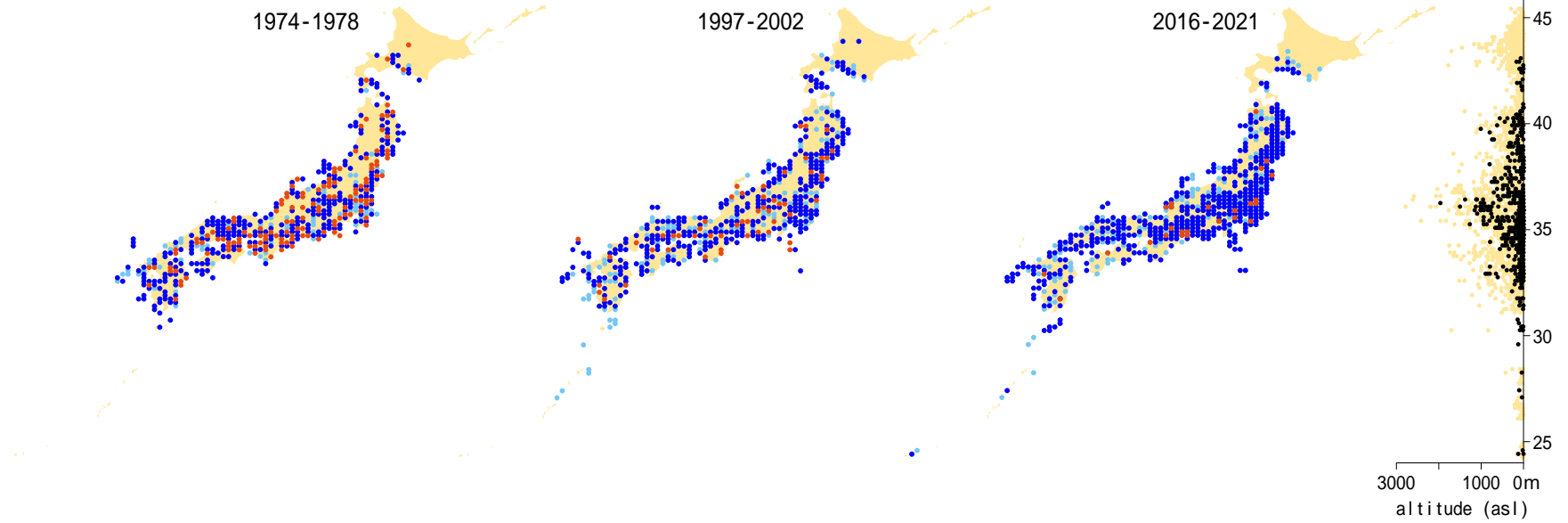
Green Pheasant

Phasianus colchicus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	134	300	67
1997-2002	53	332	119
2016-2021	25	441	111

Recorded survey sites	
1997-2002	478
2016-2021	508



Mandarin Duck

Aix galericulata

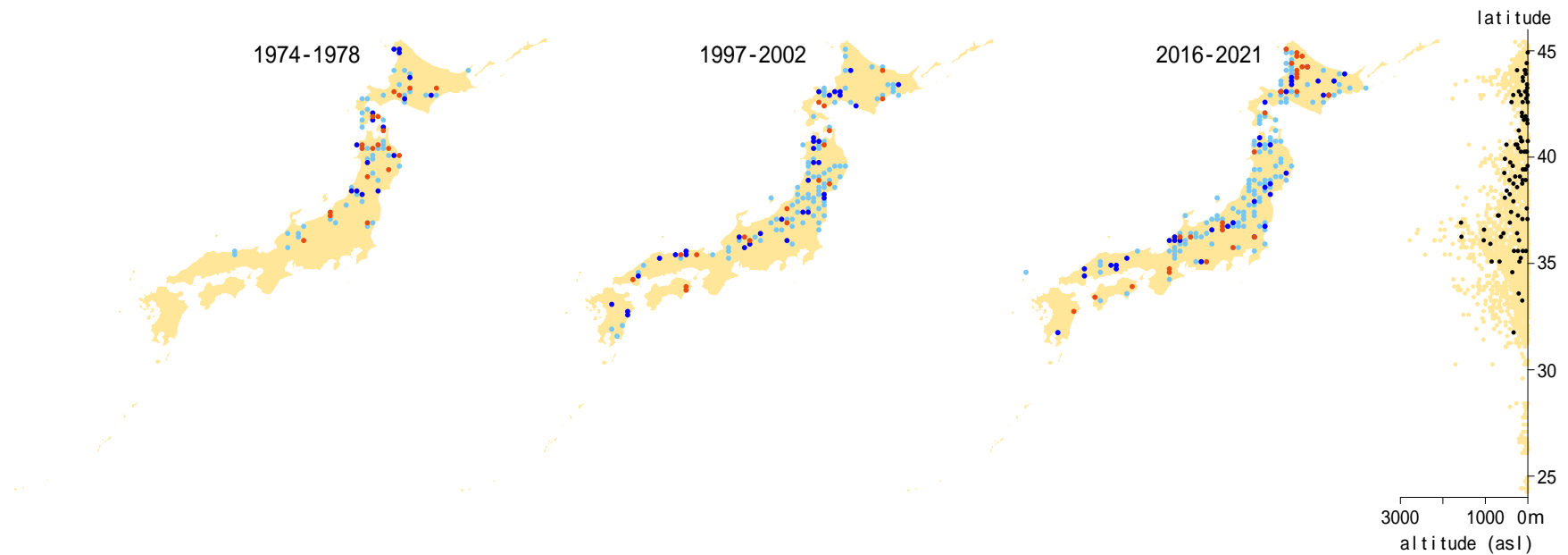
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	19	16	45
1997-2002	17	33	84
2016-2021	28	33	119

Recorded survey sites	
1997-2002	58
2016-2021	76



Altitudinal distribution
survey sites
recorded sites



Gadwall

Anas strepera

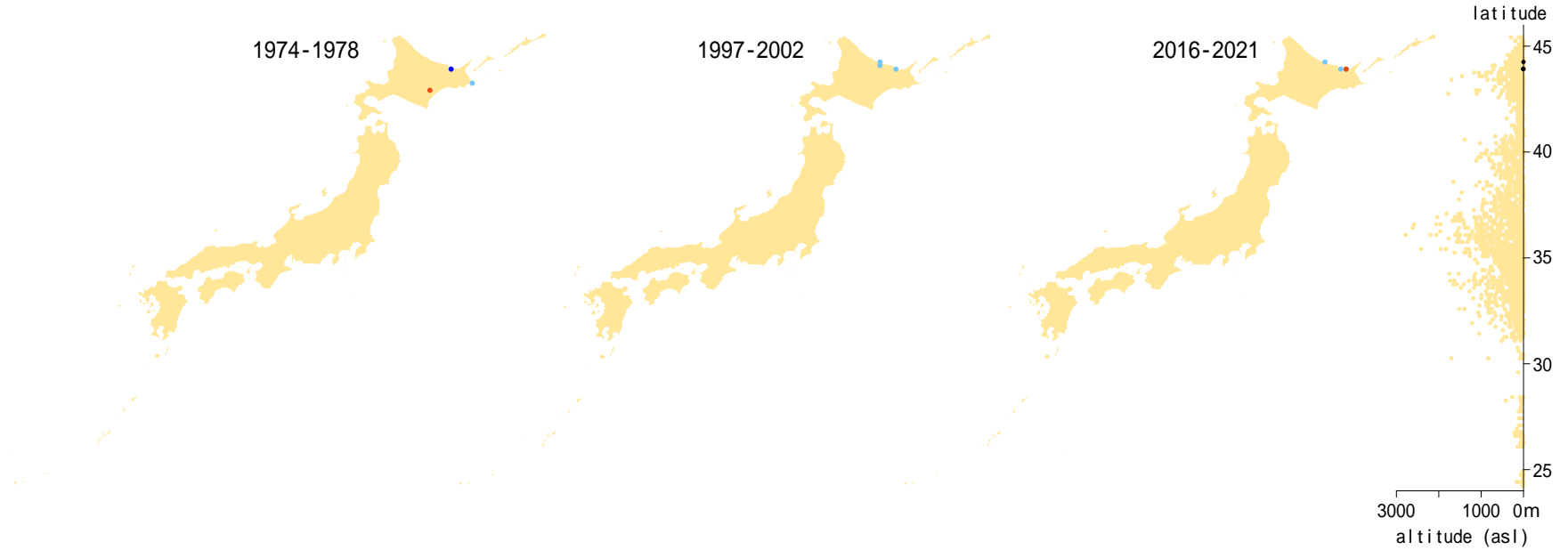
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	1	1
1997-2002	0	0	3
2016-2021	1	0	2

Recorded survey sites	
1997-2002	2
2016-2021	4



Altitudinal distribution
survey sites
recorded sites



Falcated Duck

Anas falcata

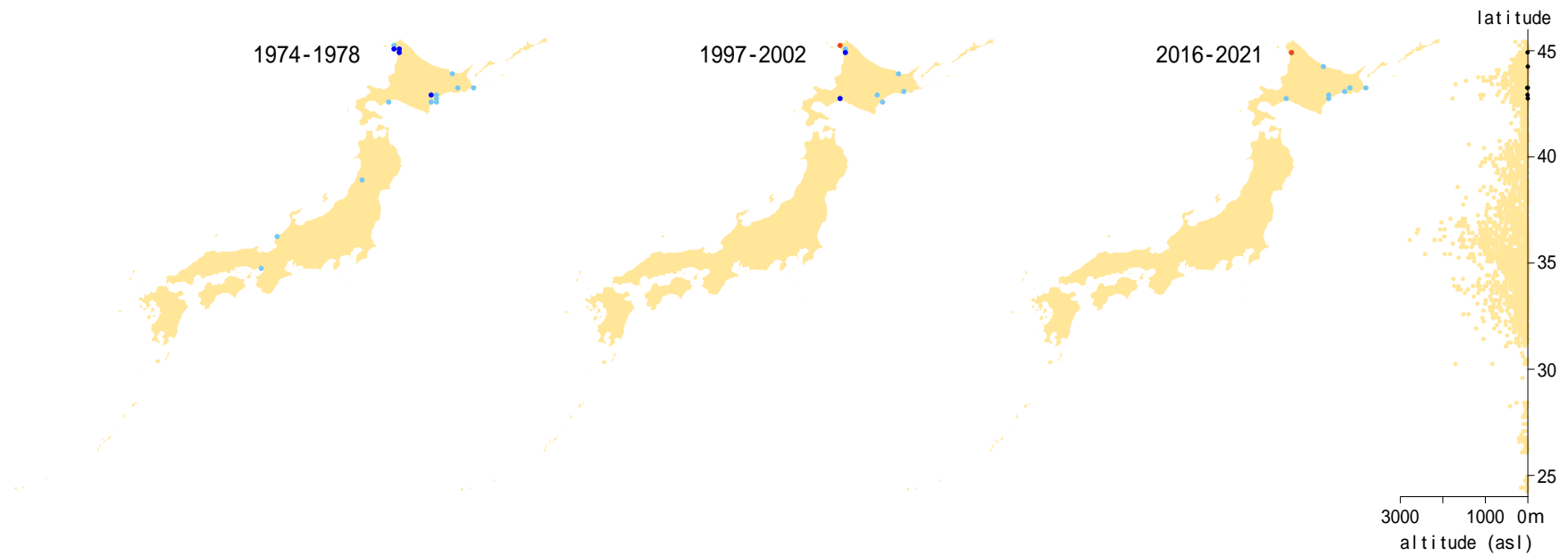
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	4	12
1997-2002	1	2	5
2016-2021	1	0	7

Recorded survey sites	
1997-2002	7
2016-2021	9



Altitudinal distribution
survey sites
recorded sites



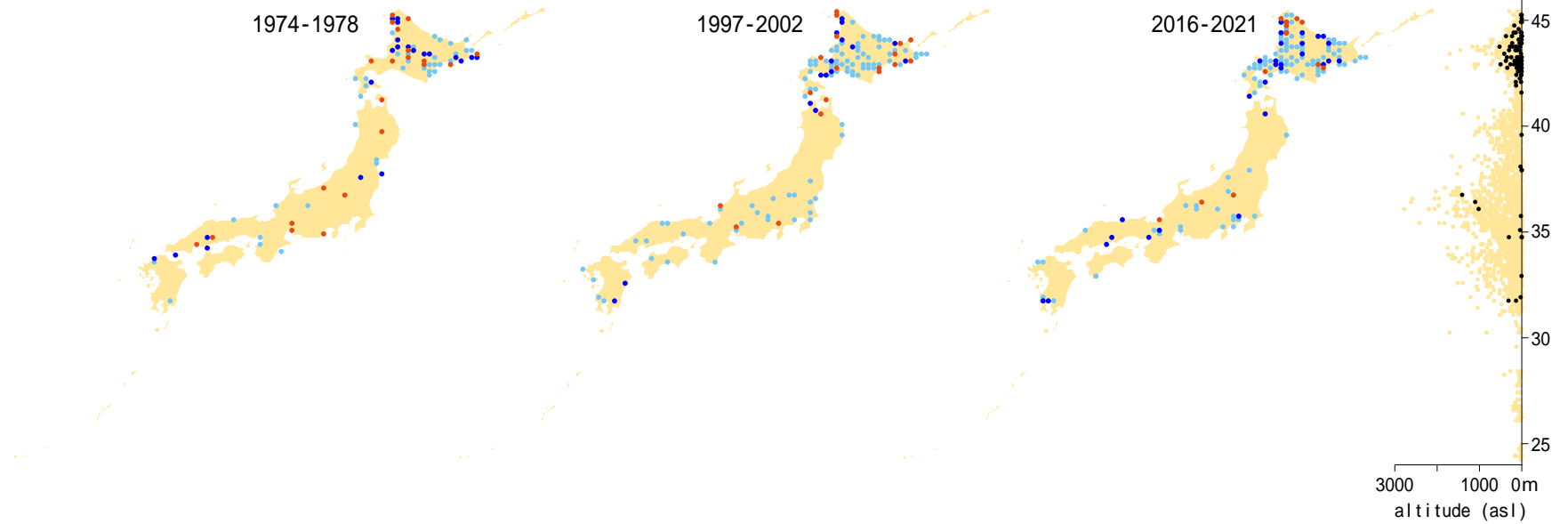
Mallard

Anas platyrhynchos

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	21	21	37
1997-2002	18	15	90
2016-2021	12	28	94

Recorded survey sites	
1997-2002	105
2016-2021	105



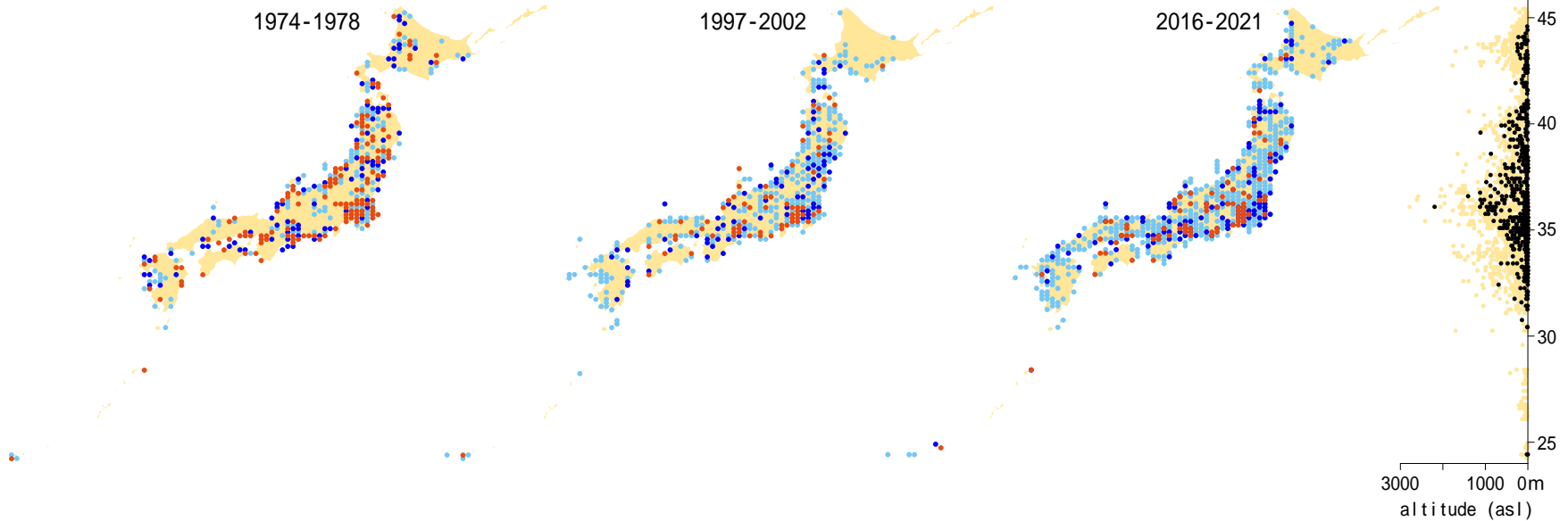
Eastern Spot-billed Duck

Anas zonorhyncha

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	141	86	135
1997-2002	68	75	271
2016-2021	84	100	414

Recorded survey sites	
1997-2002	378
2016-2021	545



Northern Shoveler

Anas clypeata

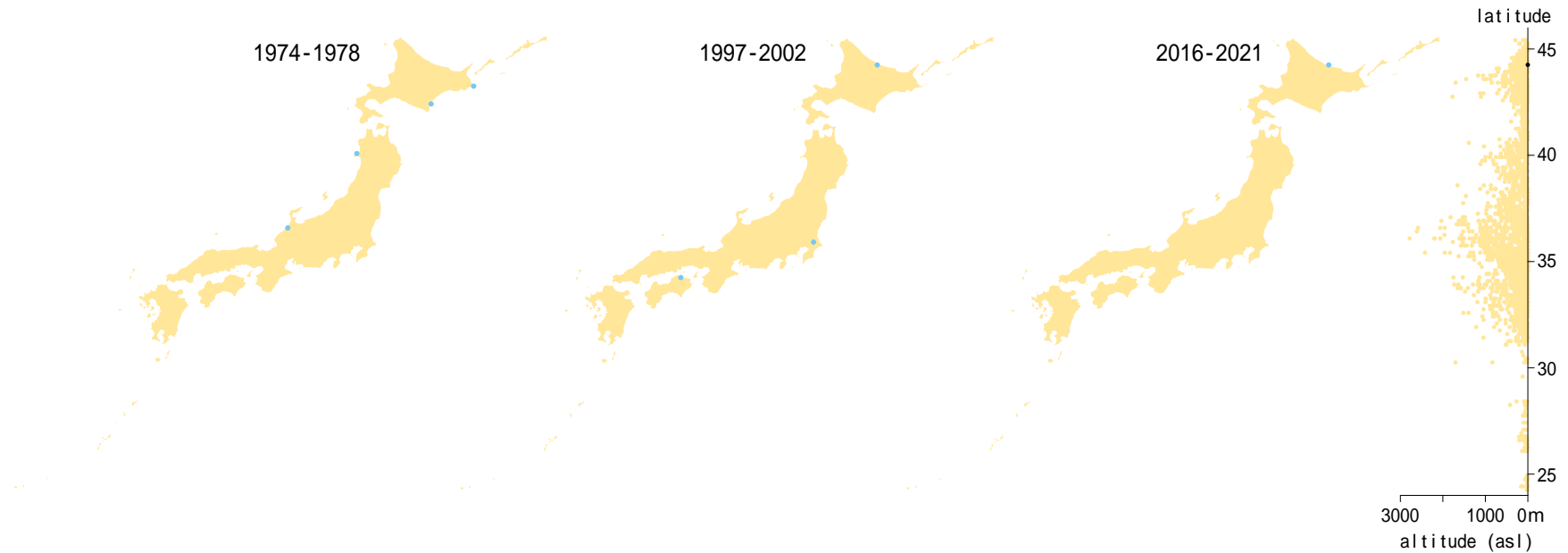
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	4
1997-2002	0	0	3
2016-2021	0	0	1

Recorded survey sites	
1997-2002	6
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



Garganey

Anas querquedula

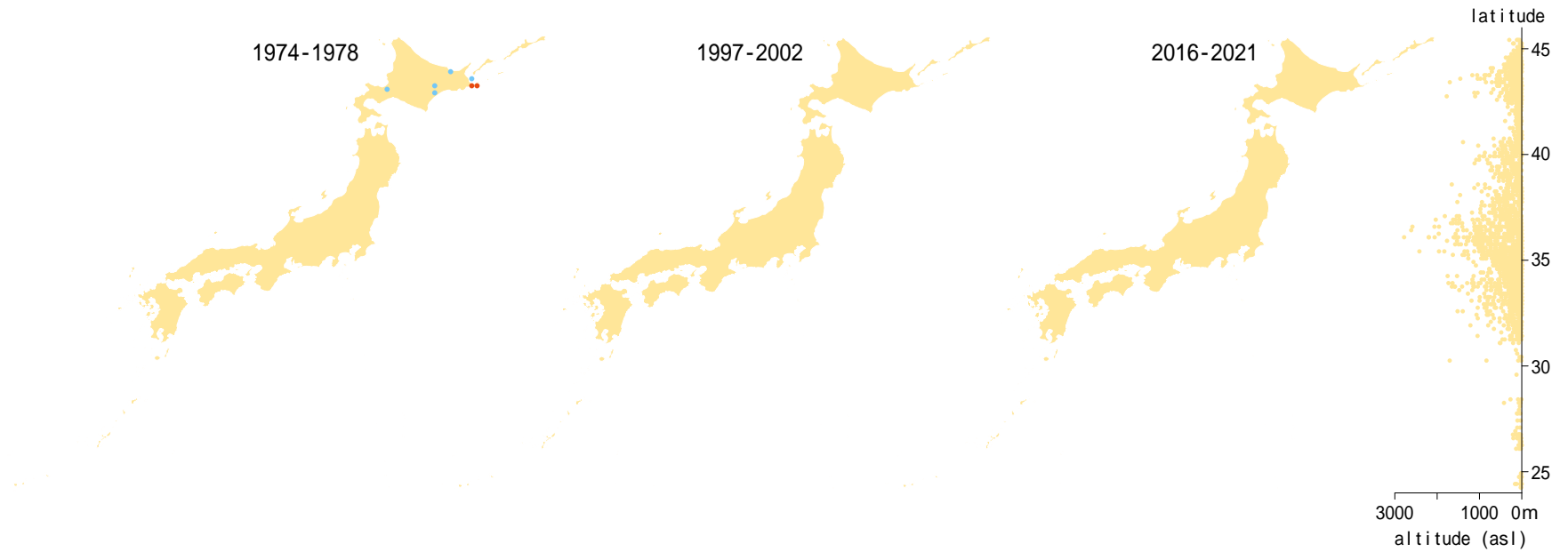
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	0	5
1997-2002	0	0	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Eurasian Teal

Anas crecca

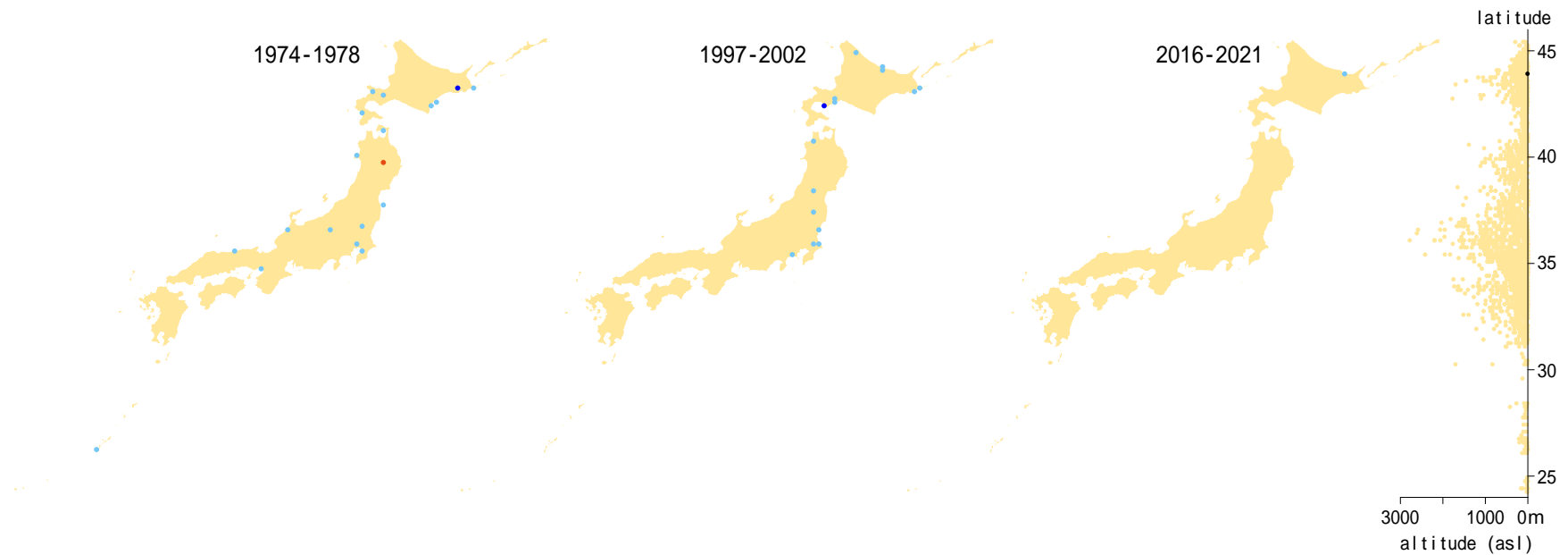
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	1	17
1997-2002	0	1	14
2016-2021	0	0	1

Recorded survey sites	
1997-2002	16
2016-2021	12



Altitudinal distribution
survey sites
recorded sites



Common Pochard

Aythya ferina

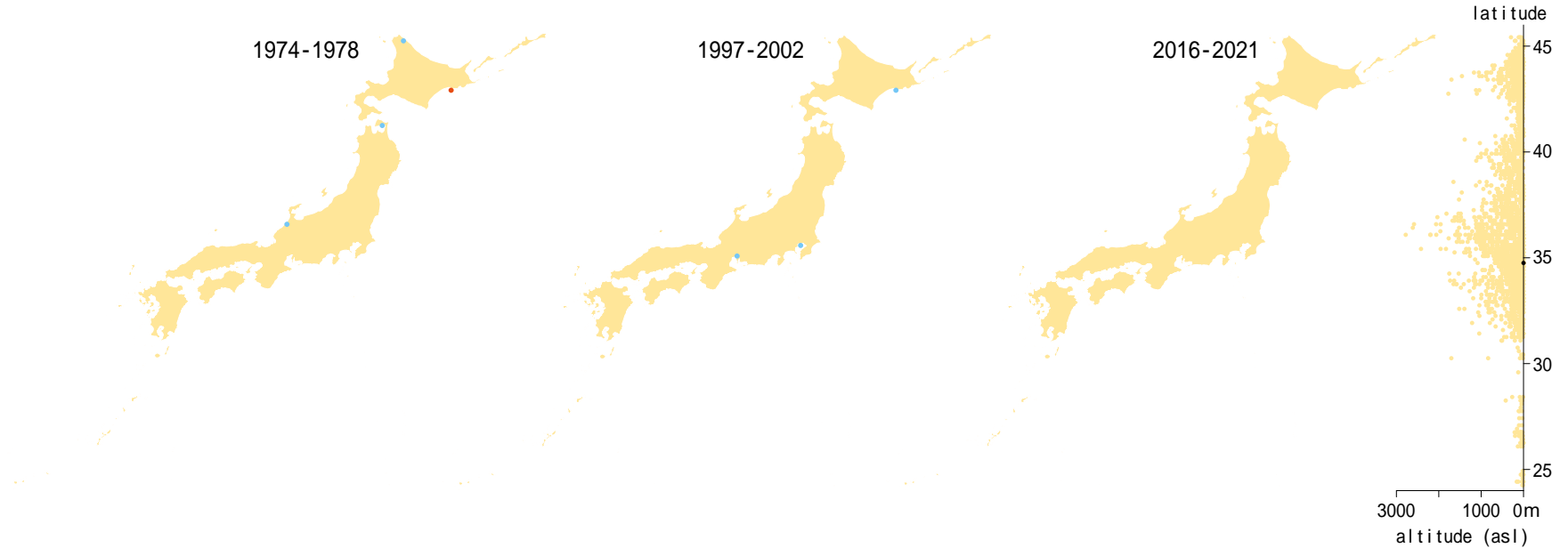
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	0	3
1997-2002	0	0	3
2016-2021	0	0	0

Recorded survey sites	
1997-2002	13
2016-2021	5



Altitudinal distribution
survey sites
recorded sites



Tufted Duck

Aythya fuligula

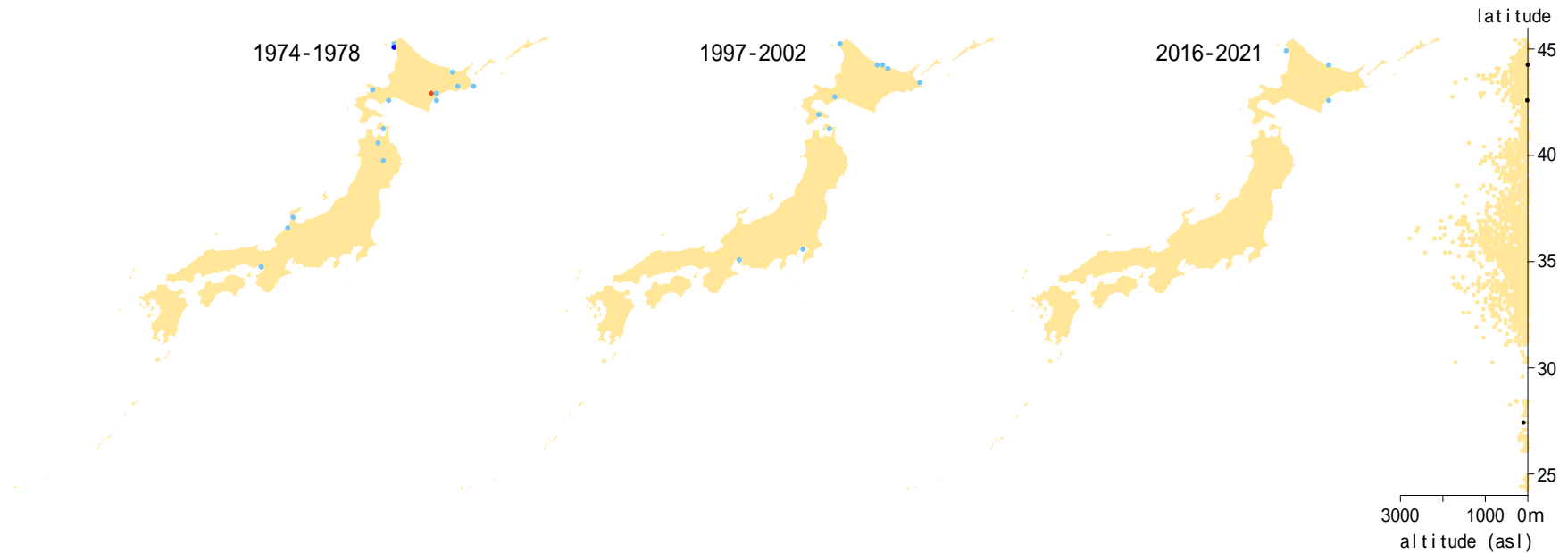
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	1	14
1997-2002	0	0	10
2016-2021	0	0	3

Recorded survey sites	
1997-2002	16
2016-2021	11



Altitudinal distribution
survey sites
recorded sites



Harlequin Duck

Histrionicus histrionicus

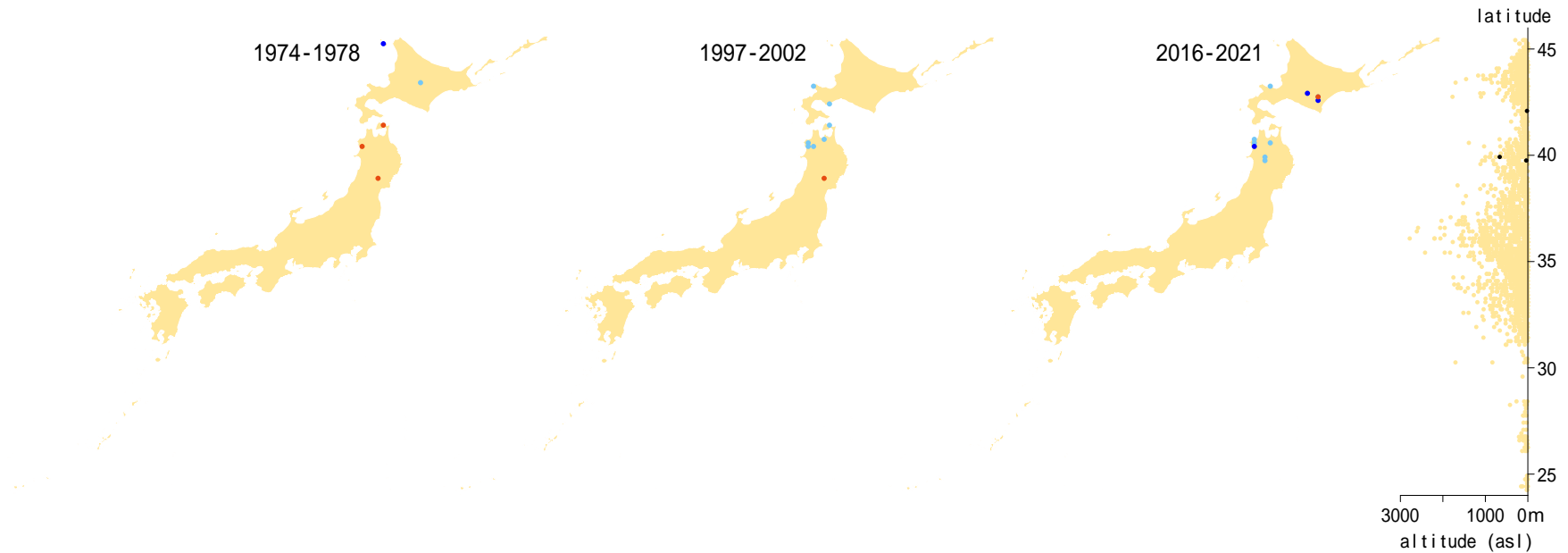
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	3	1	1
1997-2002	1	0	7
2016-2021	1	3	6

Recorded survey sites	
1997-2002	4
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



Smew

Mergellus albellus

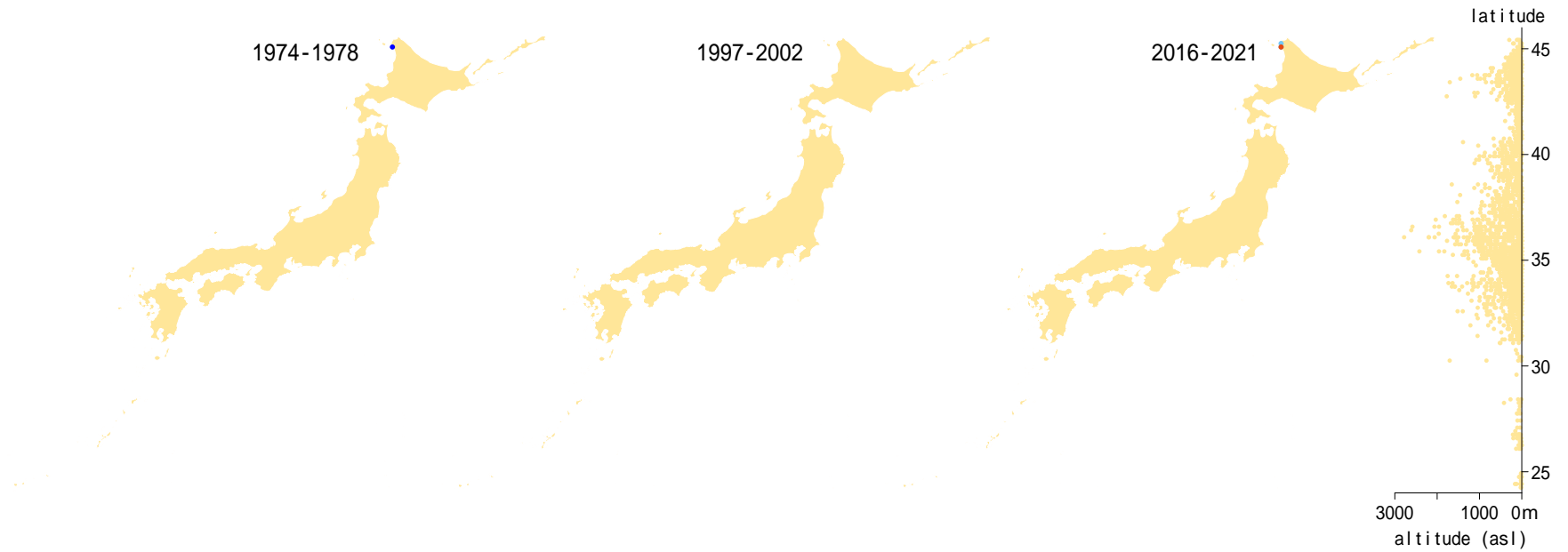
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	1	0
1997-2002	0	0	0
2016-2021	1	0	1

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Common Merganser

Mergus merganser

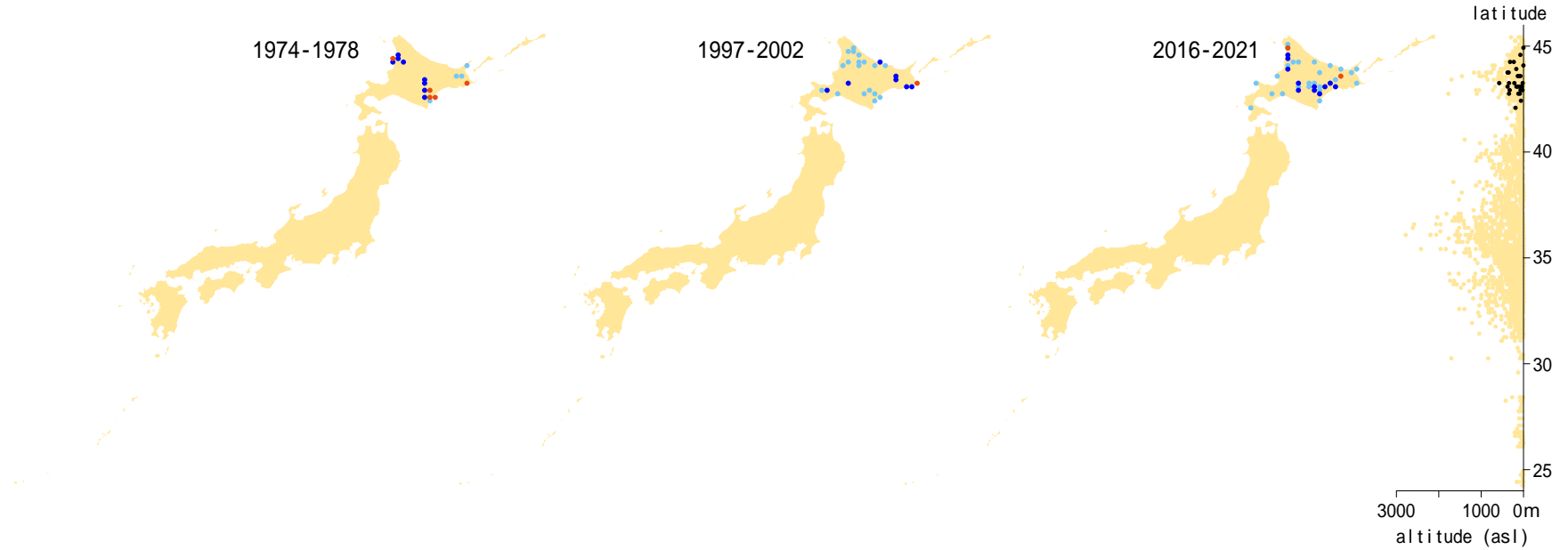
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	5	8	4
1997-2002	1	7	18
2016-2021	2	11	24

Recorded survey sites	
1997-2002	22
2016-2021	25



Altitudinal distribution
survey sites
recorded sites



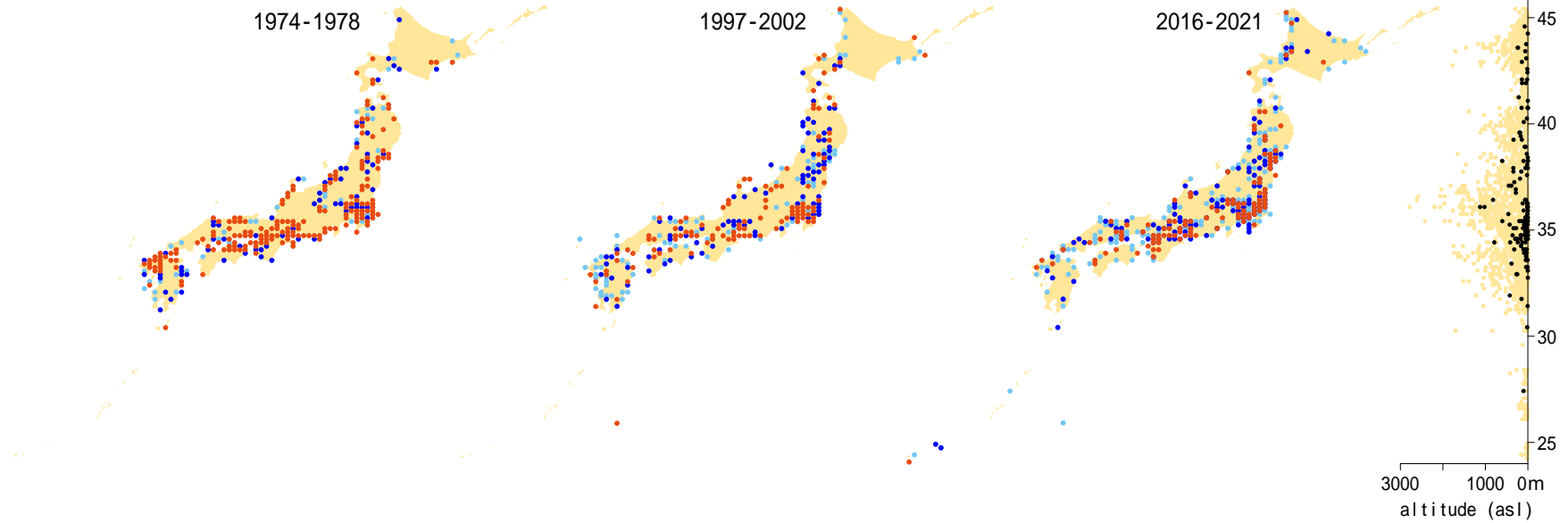
Little Grebe

Tachybaptus ruficollis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	185	69	37
1997-2002	110	86	76
2016-2021	114	80	122

Recorded survey sites	
1997-2002	158
2016-2021	119



Red-necked Grebe

Podiceps grisegena

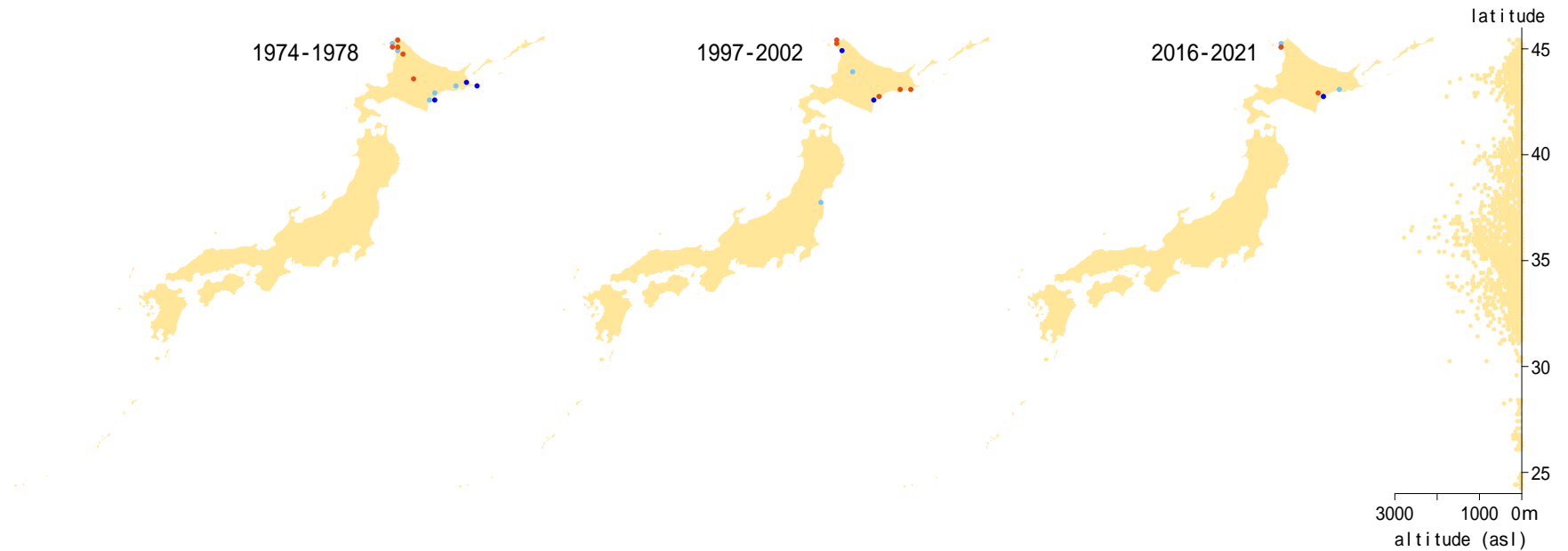
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	5	3	5
1997-2002	5	2	2
2016-2021	2	1	2

Recorded survey sites	
1997-2002	2
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Great Crested Grebe

Podiceps cristatus

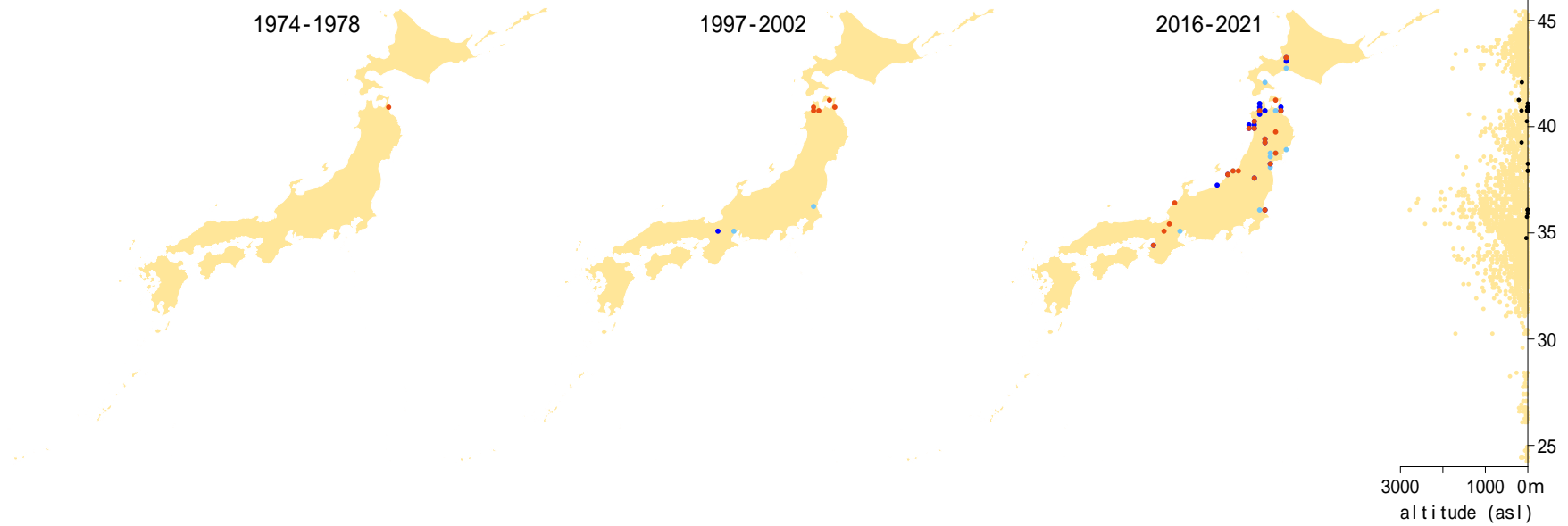
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	0	0
1997-2002	5	1	2
2016-2021	21	9	9

Recorded survey sites	
1997-2002	8
2016-2021	21



Altitudinal distribution
survey sites
recorded sites



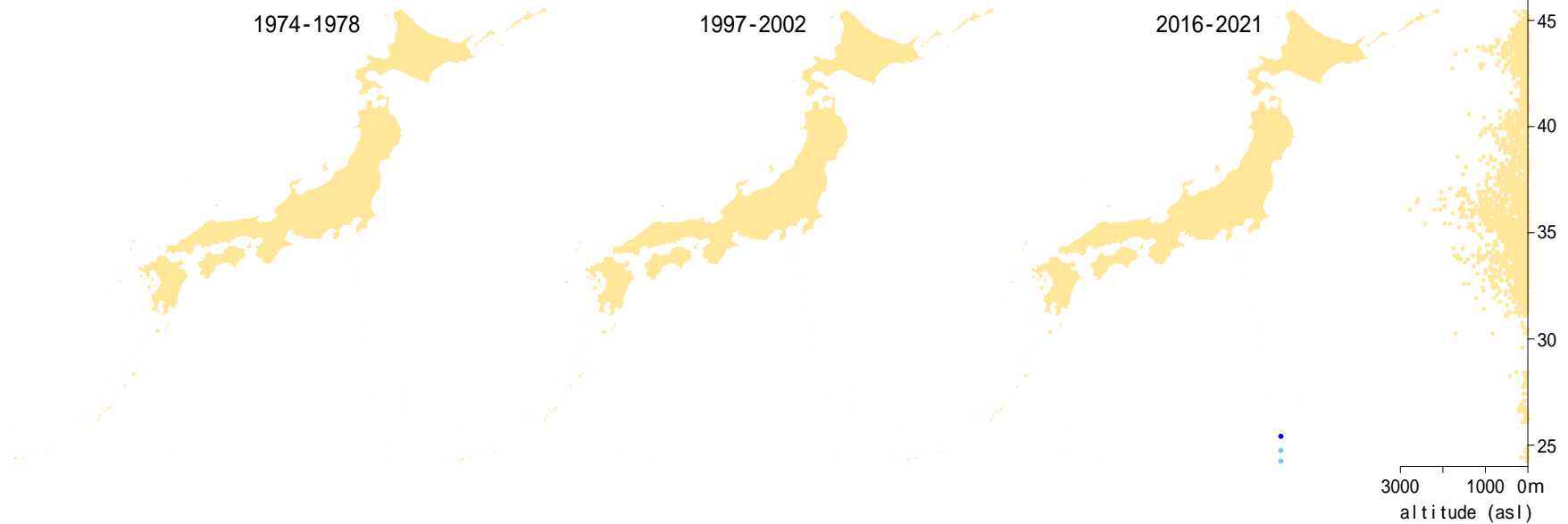
Red-tailed Tropicbird

Phaethon rubricauda

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	1	2

Recorded survey sites	
1997-2002	0
2016-2021	0



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

White-tailed Tropicbird

Phaethon lepturus

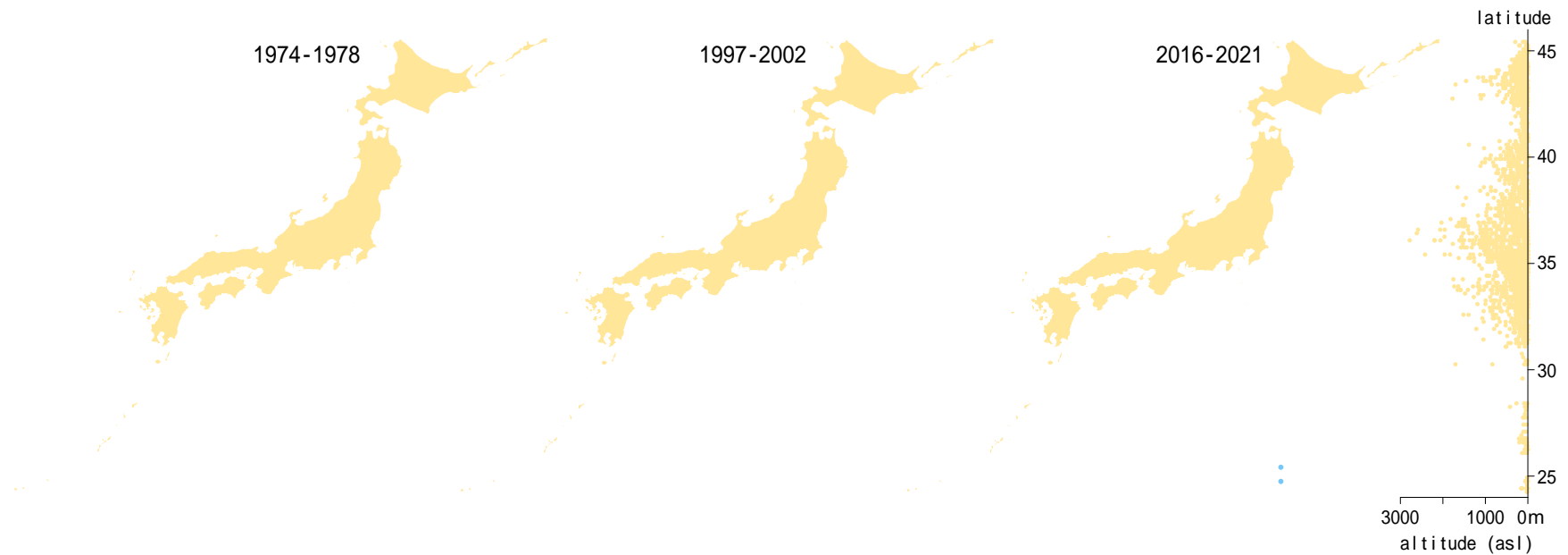
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	0	2

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Japanese Wood Pigeon

Columba janthina

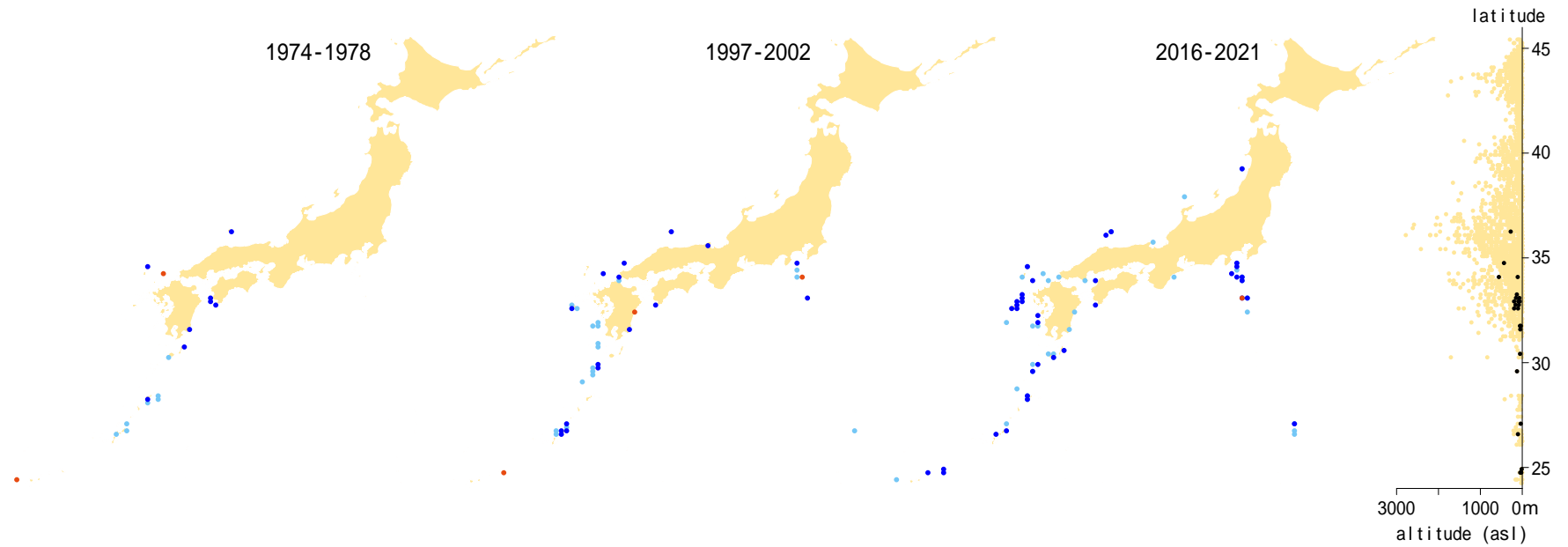
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	8	7
1997-2002	3	16	18
2016-2021	1	35	23

Recorded survey sites	
1997-2002	25
2016-2021	22



Altitudinal distribution
survey sites
recorded sites



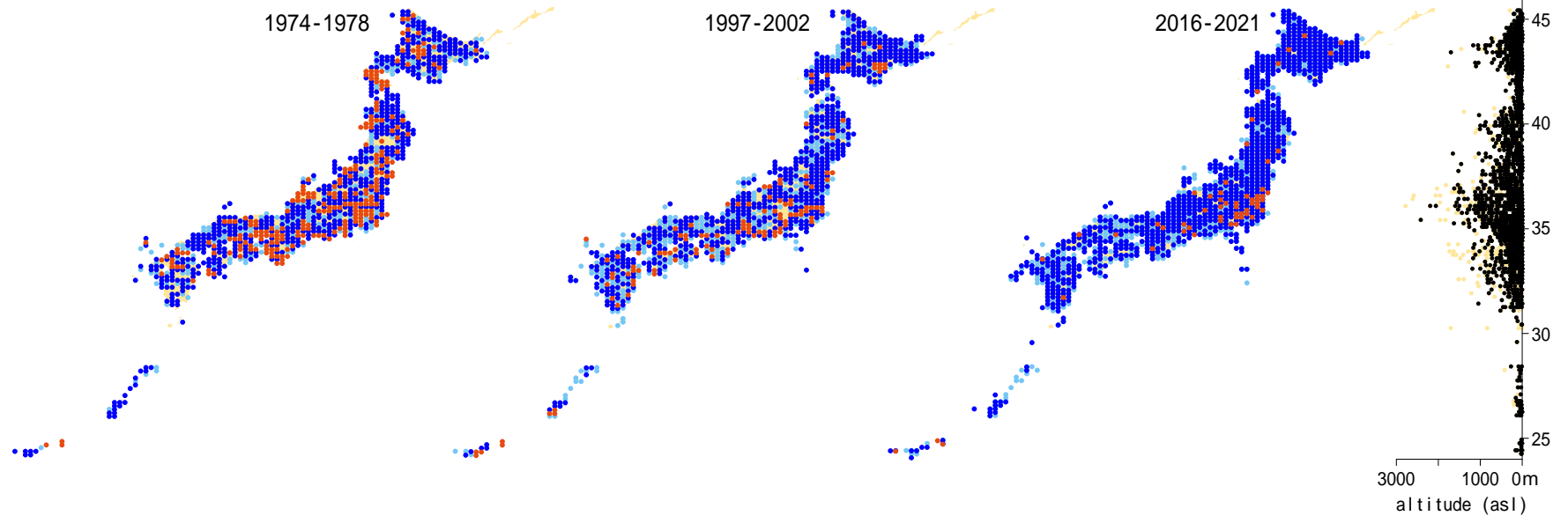
Oriental Turtle Dove

Streptopelia orientalis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	242	612	168
1997-2002	116	672	292
2016-2021	57	886	190

Recorded survey sites	
1997-2002	1553
2016-2021	1615



Common Emerald Dove

Chalcophaps indica

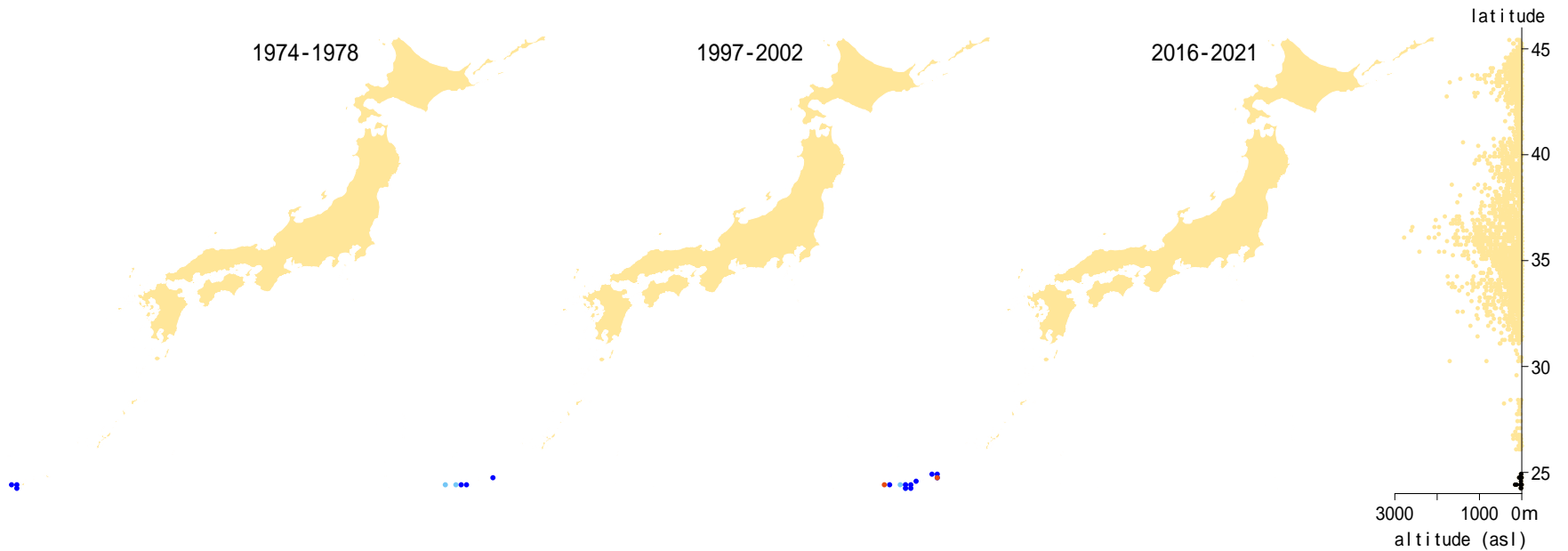
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	3	0
1997-2002	0	3	2
2016-2021	2	8	1

Recorded survey sites	
1997-2002	7
2016-2021	14



Altitudinal distribution
survey sites
recorded sites



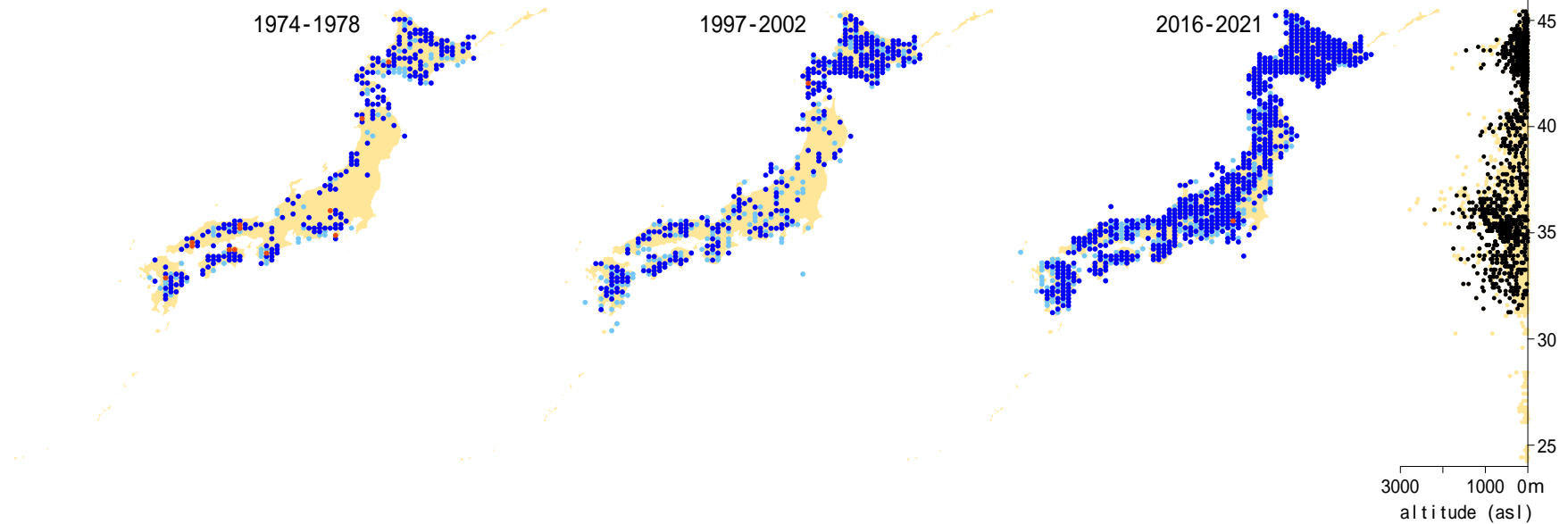
White-bellied Green Pigeon

Treron sieboldii

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	12	233	73
1997-2002	1	313	140
2016-2021	1	668	138

Recorded survey sites	
1997-2002	410
2016-2021	799



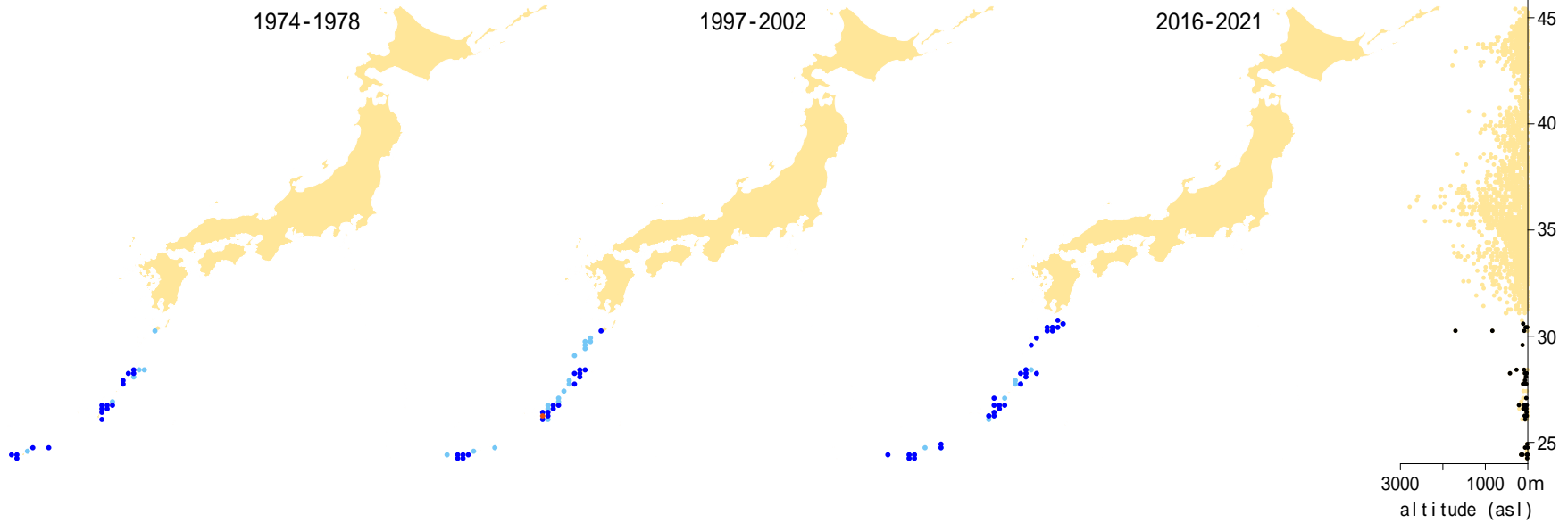
Whistling Green Pigeon

Treron formosae

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	17	6
1997-2002	1	19	17
2016-2021	0	30	6

Recorded survey sites	
1997-2002	48
2016-2021	39



Laysan albatross

Diomedea immutabilis

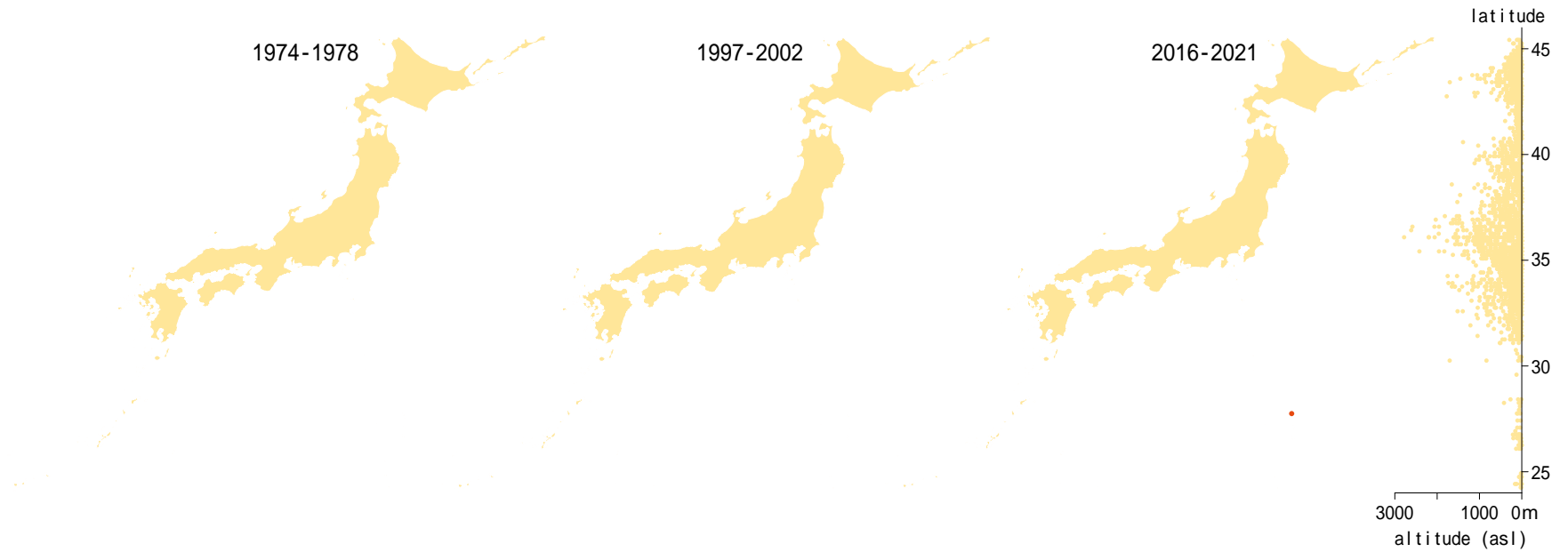
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Black-footed Albatross

Phoebastria nigripes

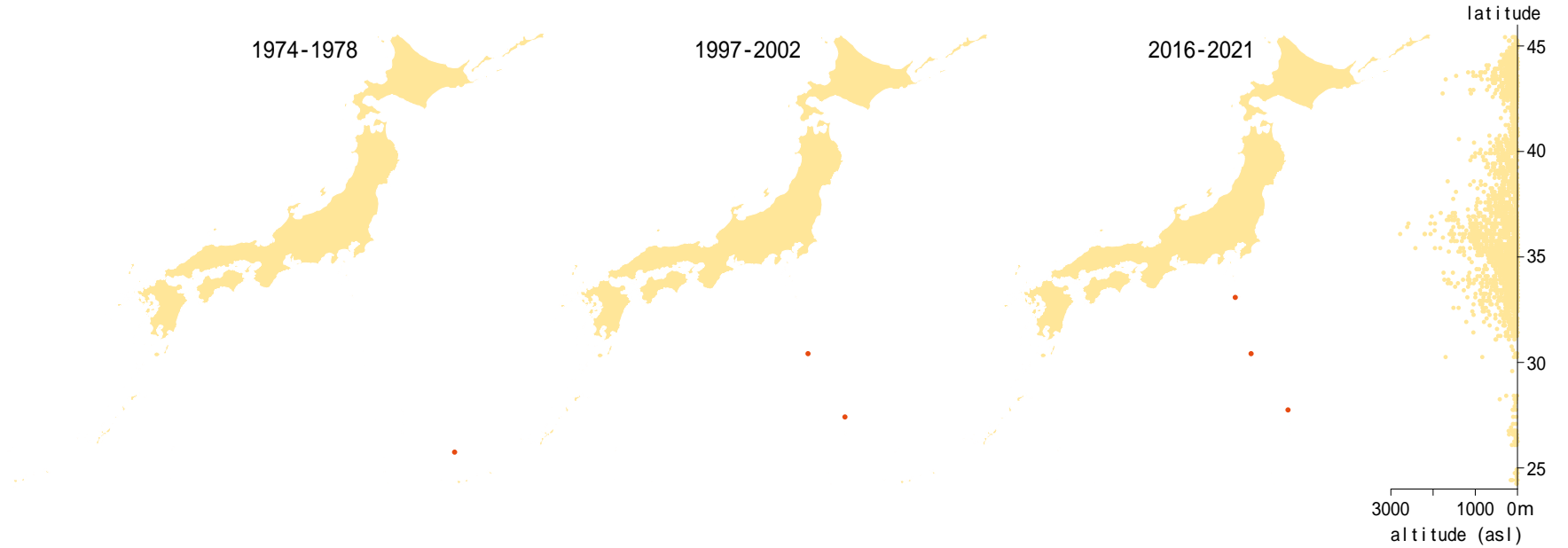
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	3	0	0
2016-2021	3	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Short-tailed Albatross

Phoebastria albatrus

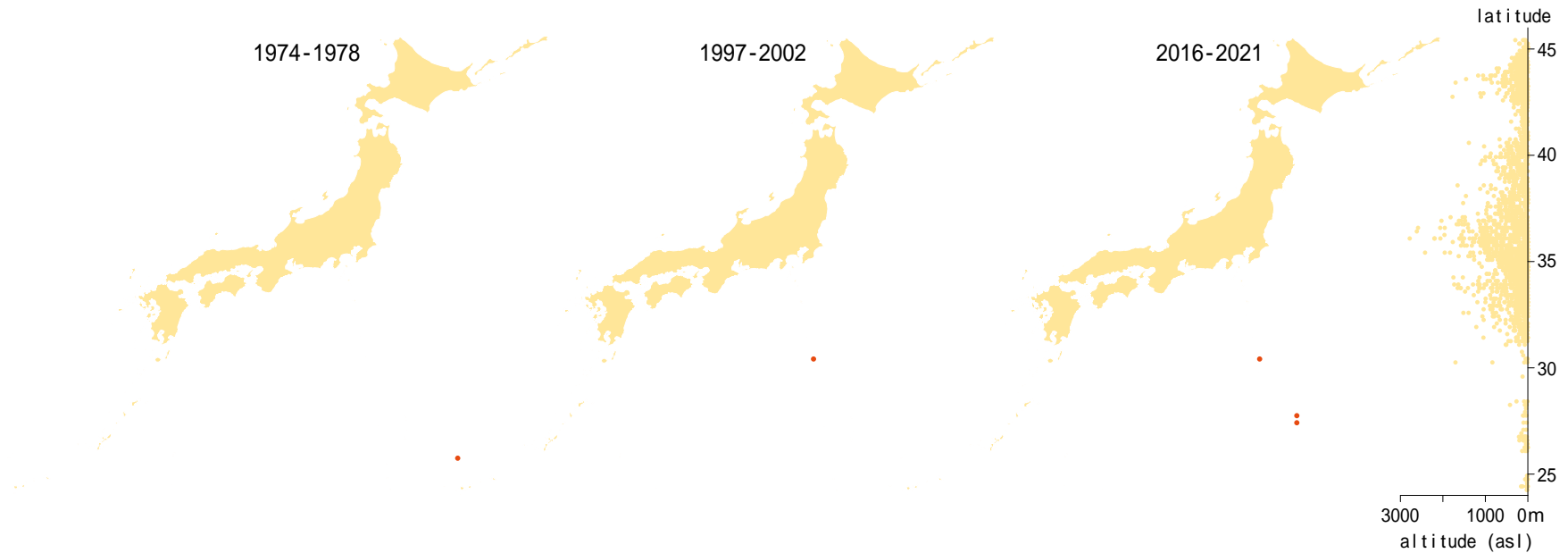
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	2	0	0
2016-2021	3	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



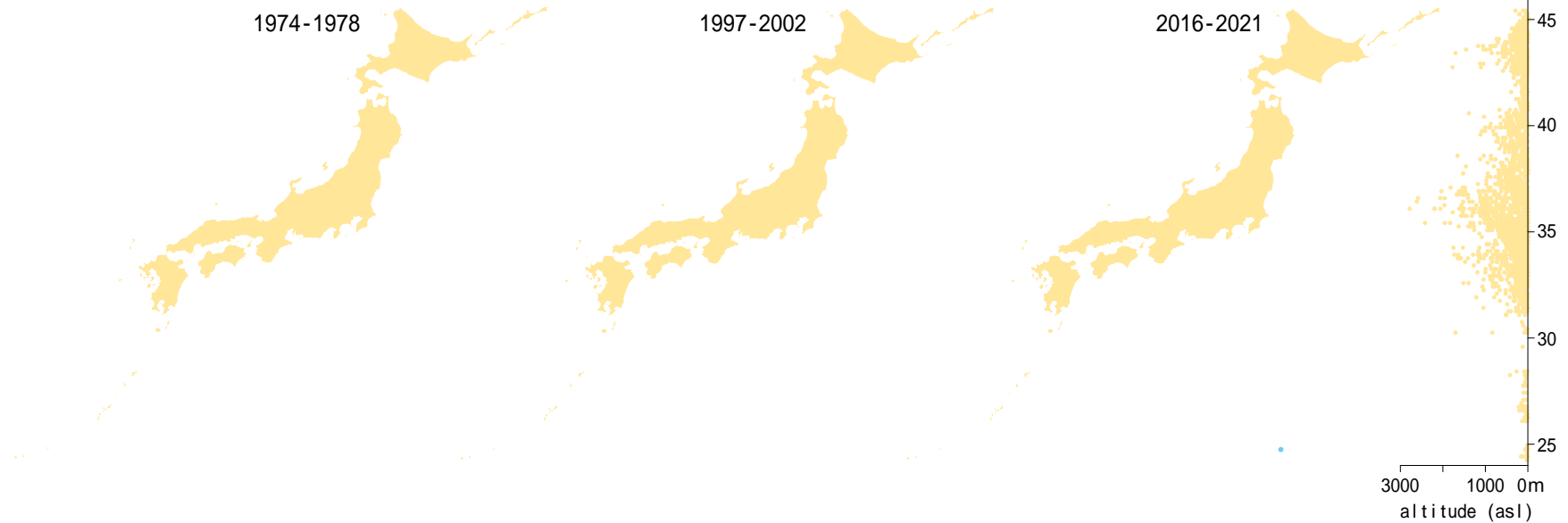
Bonin Petrel

Pterodroma hypoleuca

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	0	1

Recorded survey sites	
1997-2002	0
2016-2021	0



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Streaked Shearwater

Calonectris leucomelas

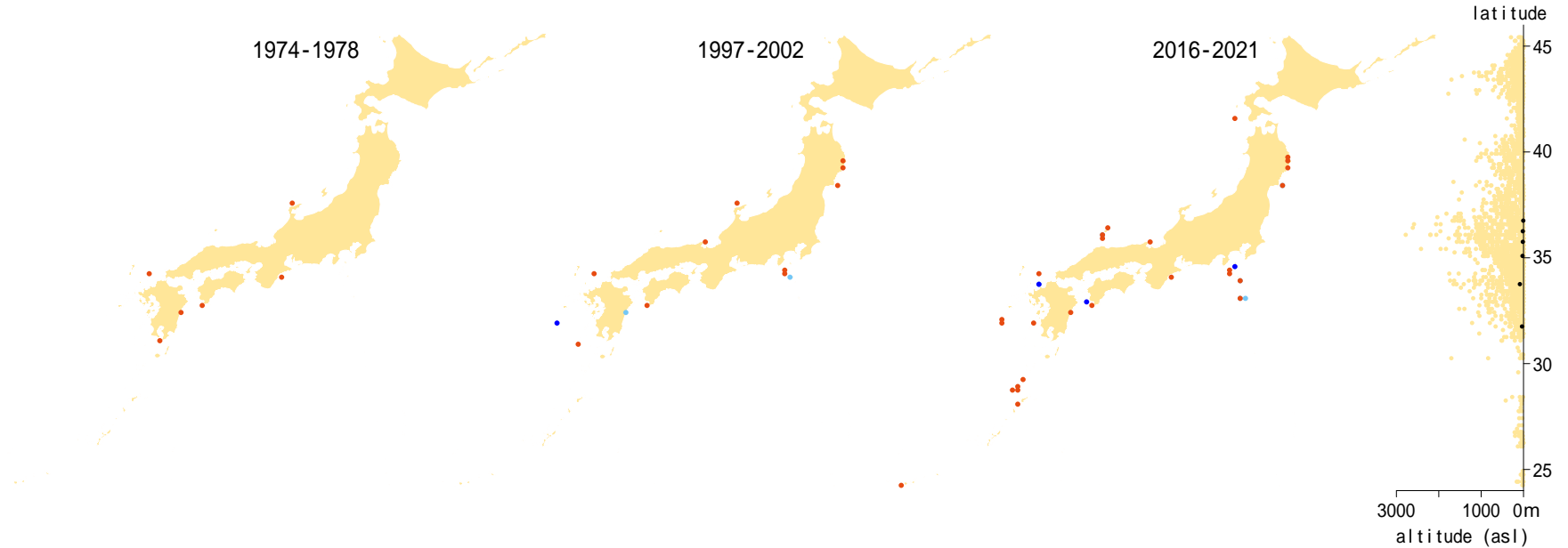
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	6	0	0
1997-2002	10	1	2
2016-2021	26	3	1

Recorded survey sites	
1997-2002	4
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



Wedge-tailed Shearwater

Puffinus pacificus

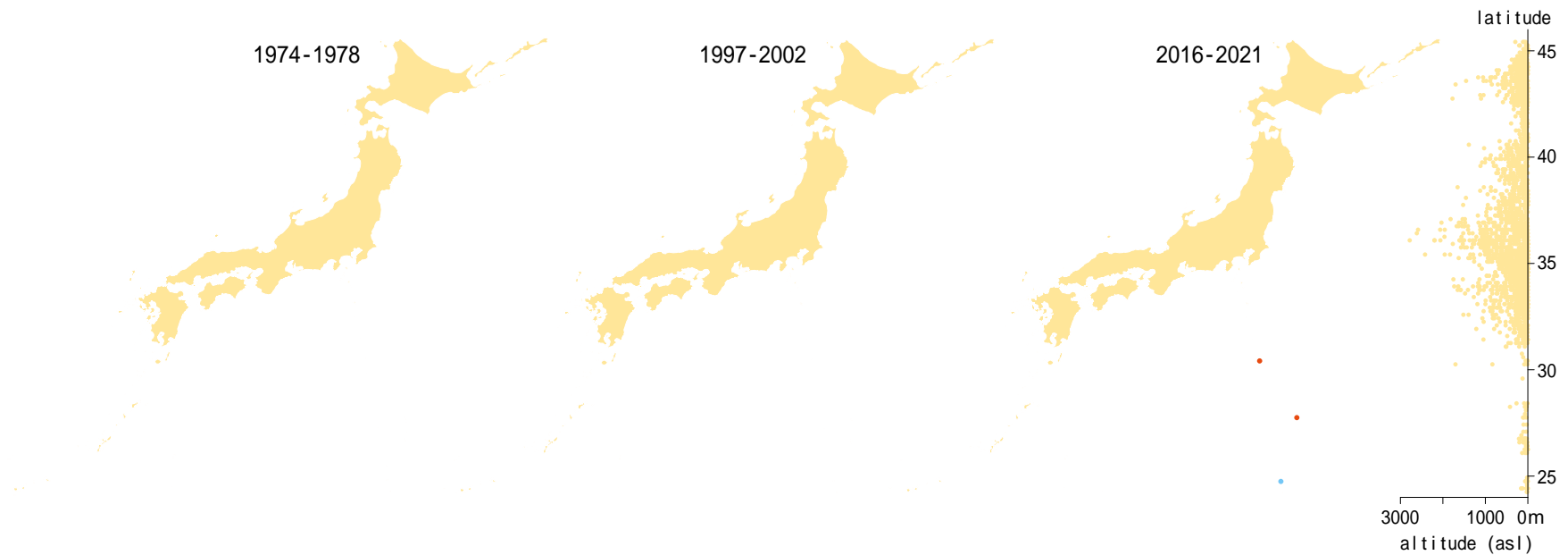
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	2	0	1

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

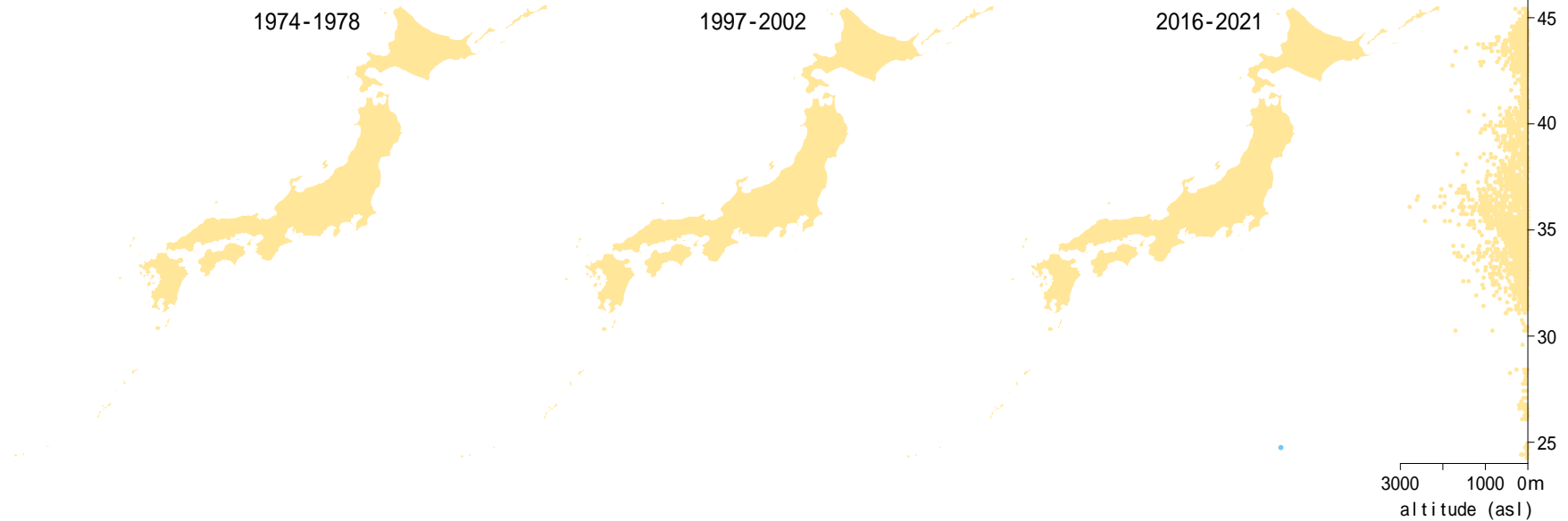
Audubon's Shearwater

Puffinus lherminieri

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	0	1

Recorded survey sites	
1997-2002	0
2016-2021	0



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Bulwer's Petrel

Bulweria bulwerii

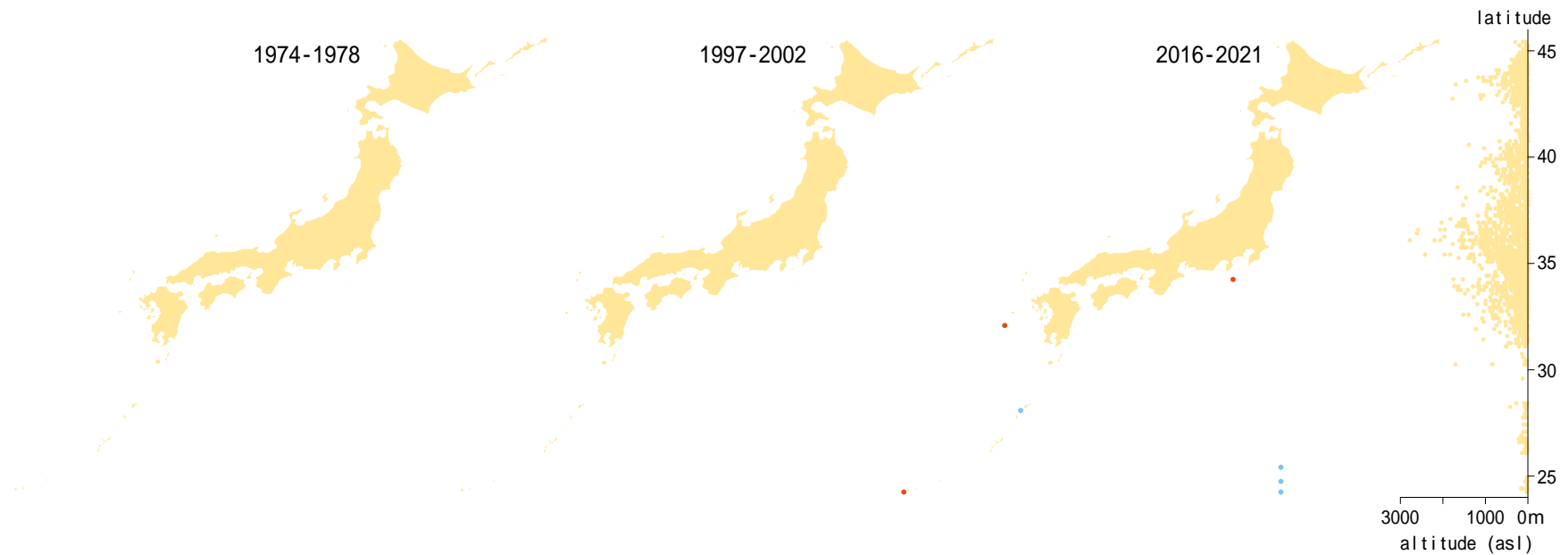
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	3	0	4

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Band-rumped Storm Petrel

Oceanodroma castro

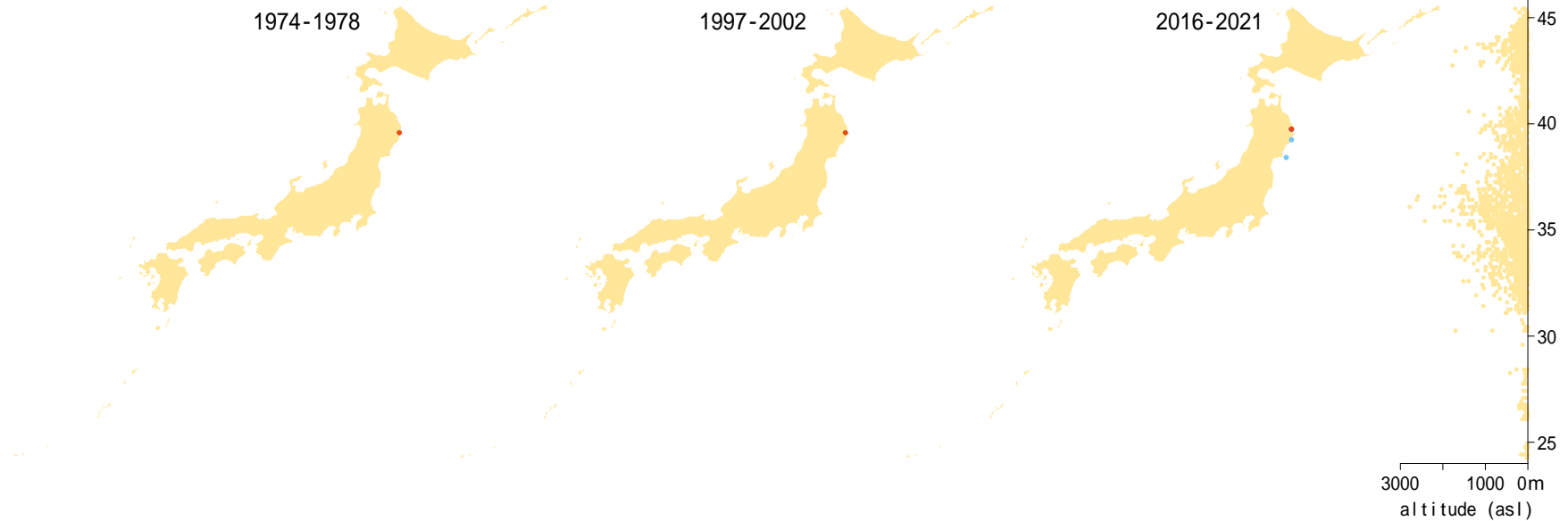
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	
	A B C
1974-1978	1 0 0
1997-2002	1 0 0
2016-2021	1 0 2

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Swinhoe's Storm Petrel

Oceanodroma monorhis

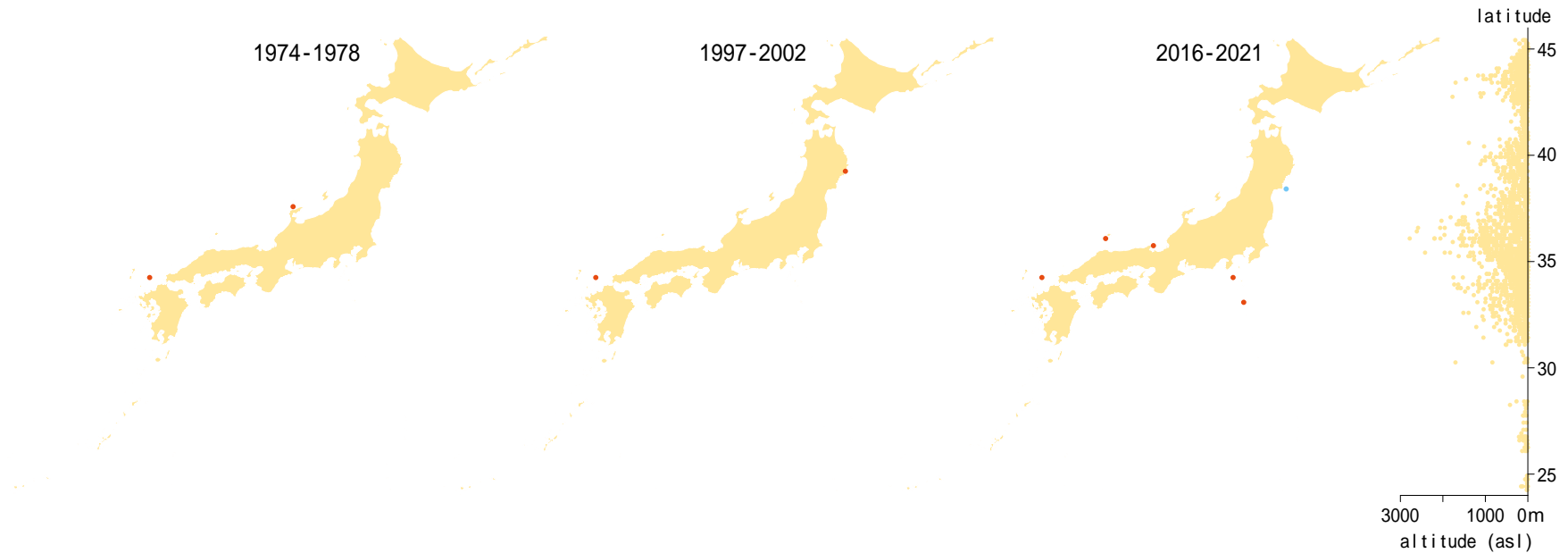
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	0	0
1997-2002	2	0	0
2016-2021	5	0	1

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Leach's Storm Petrel

Oceanodroma leucorhoa

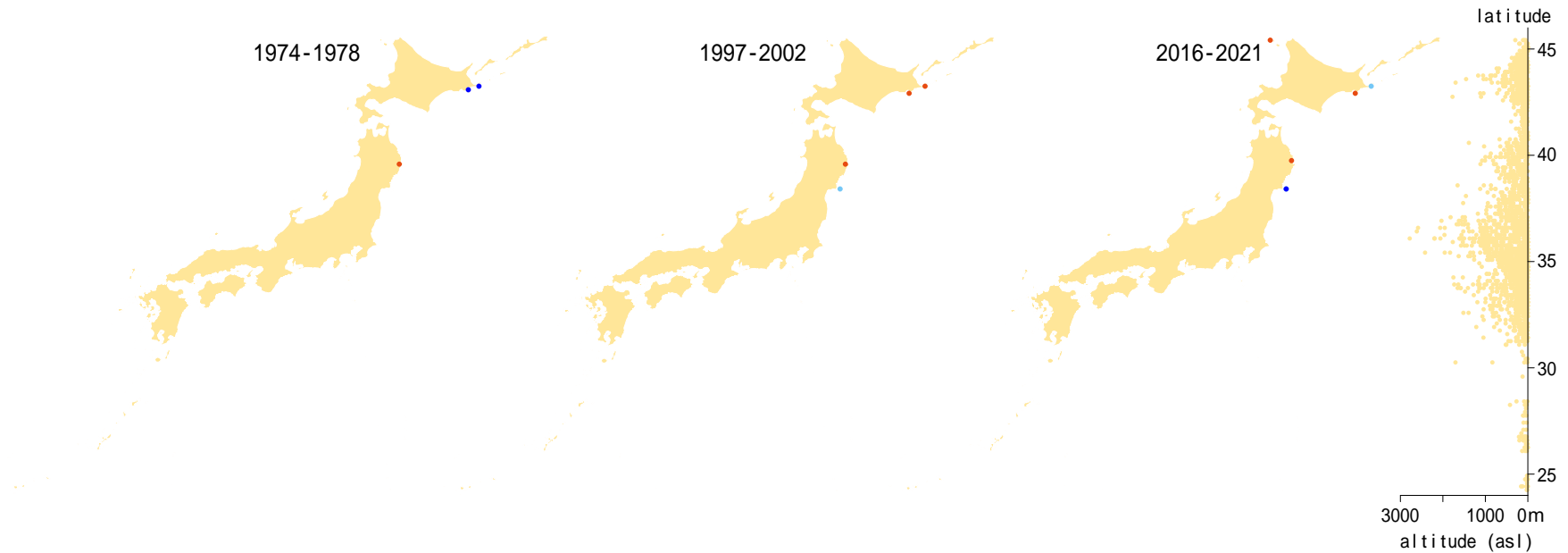
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	2	0
1997-2002	3	0	1
2016-2021	3	1	1

Recorded survey sites	
1997-2002	0
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



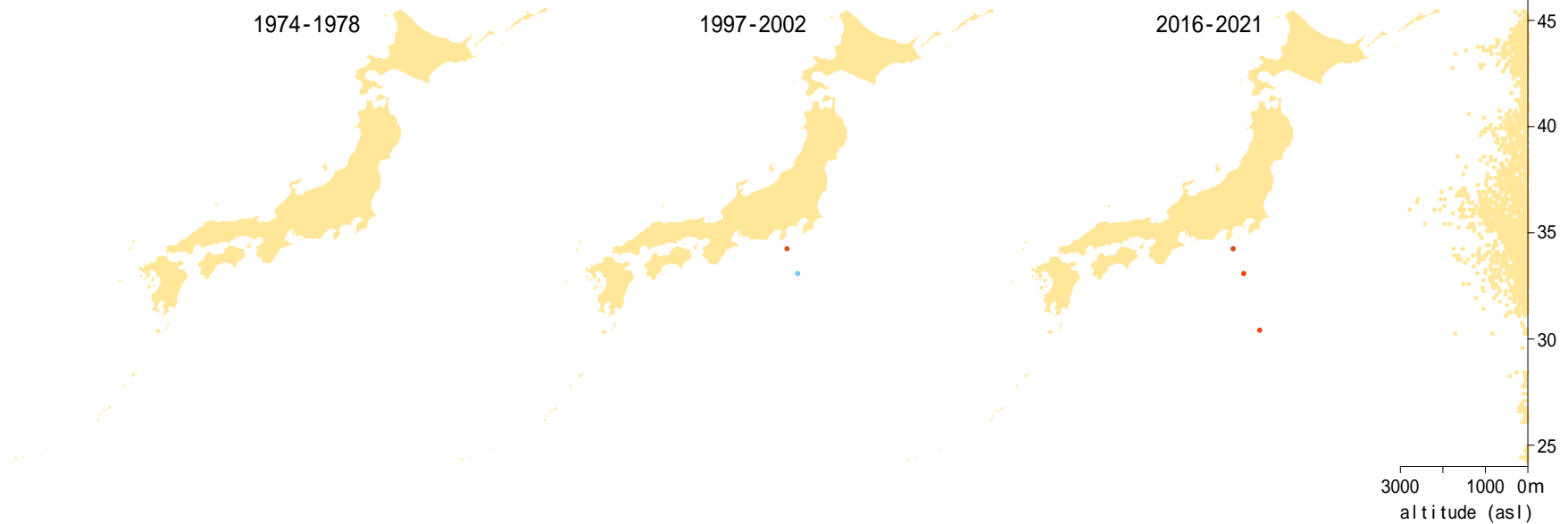
Tristram's Storm Petrel

Oceanodroma tristrami

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	1	0	1
2016-2021	3	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Oriental Stork

Ciconia boyciana

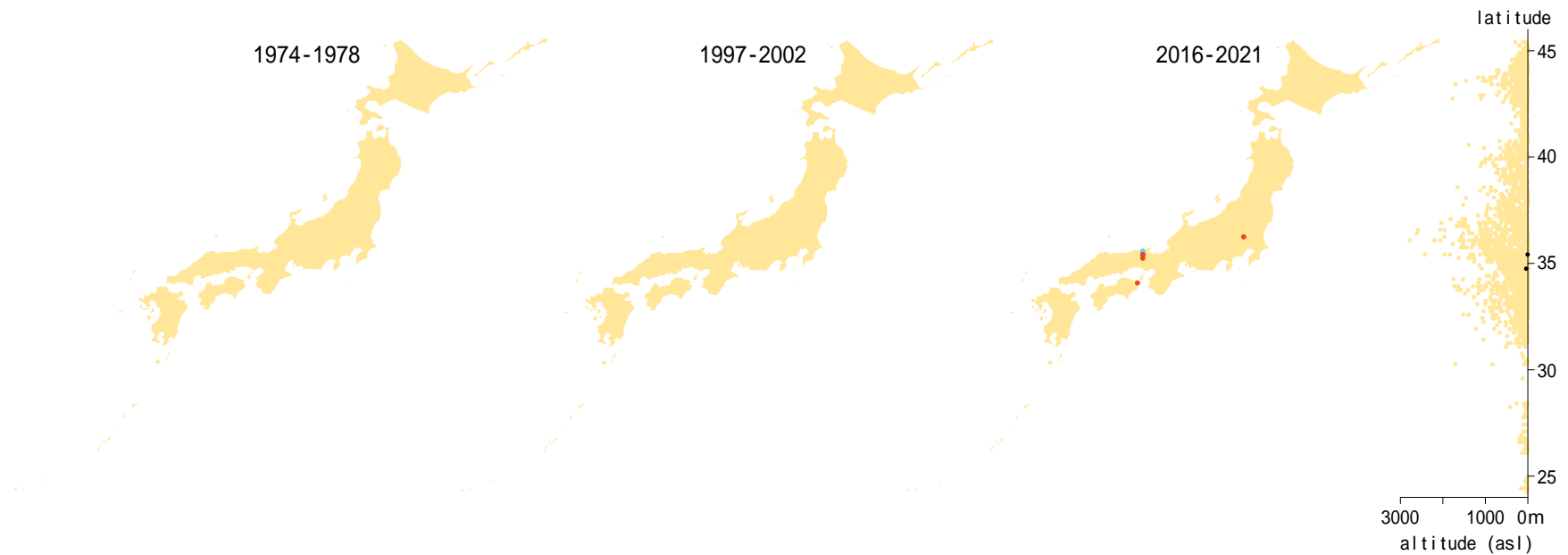
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	4	0	1

Recorded survey sites	
1997-2002	0
2016-2021	2



Altitudinal distribution
survey sites
recorded sites



Red-footed Booby

Sula sula

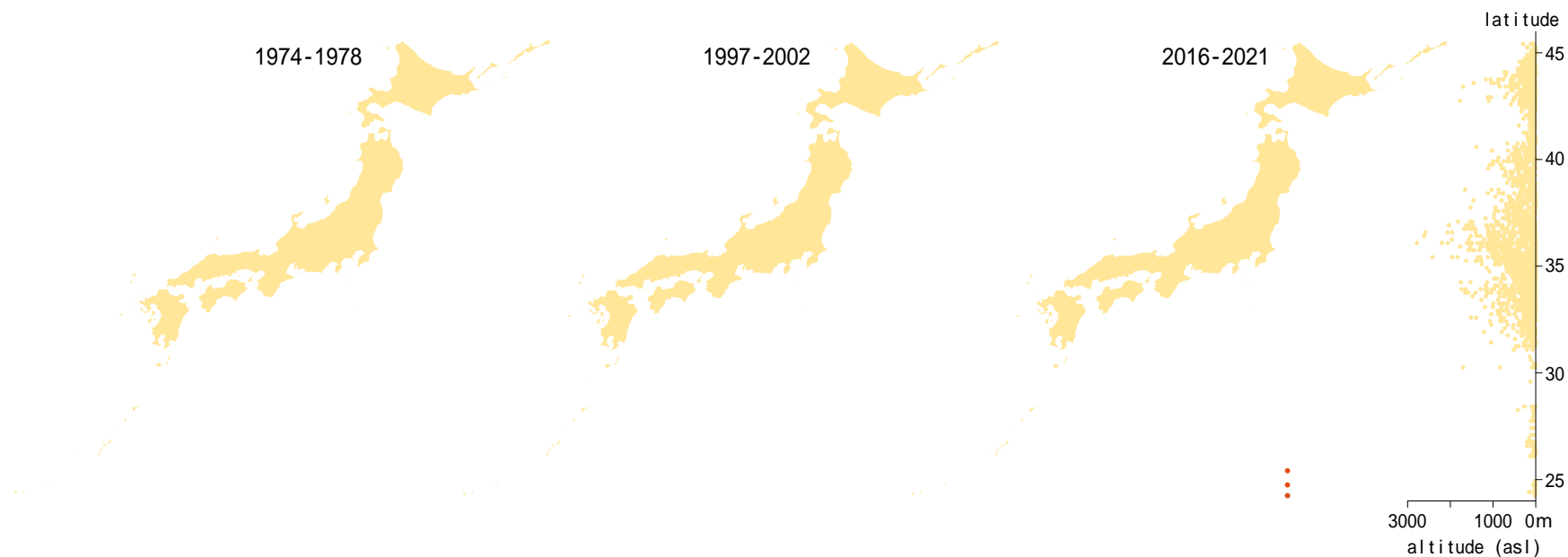
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	3	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Brown Booby

Sula leucogaster

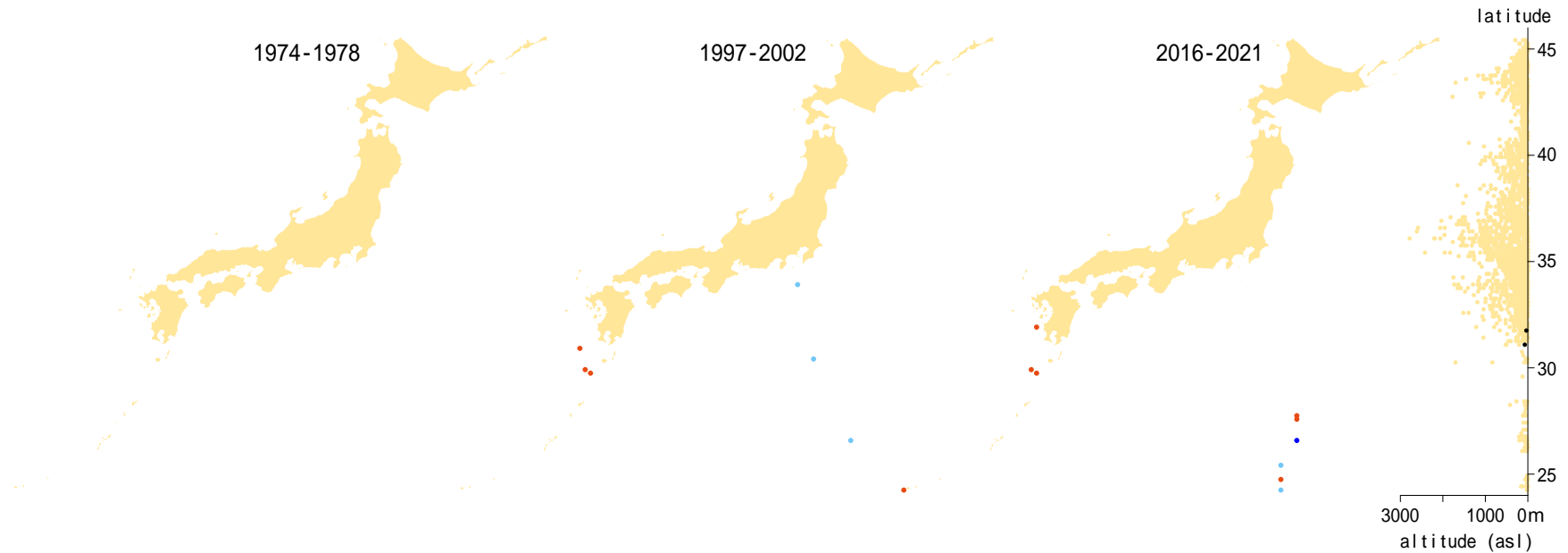
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	3	0	3
2016-2021	7	1	2

Recorded survey sites	
1997-2002	1
2016-2021	2



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Pelagic Cormorant

Phalacrocorax pelagicus

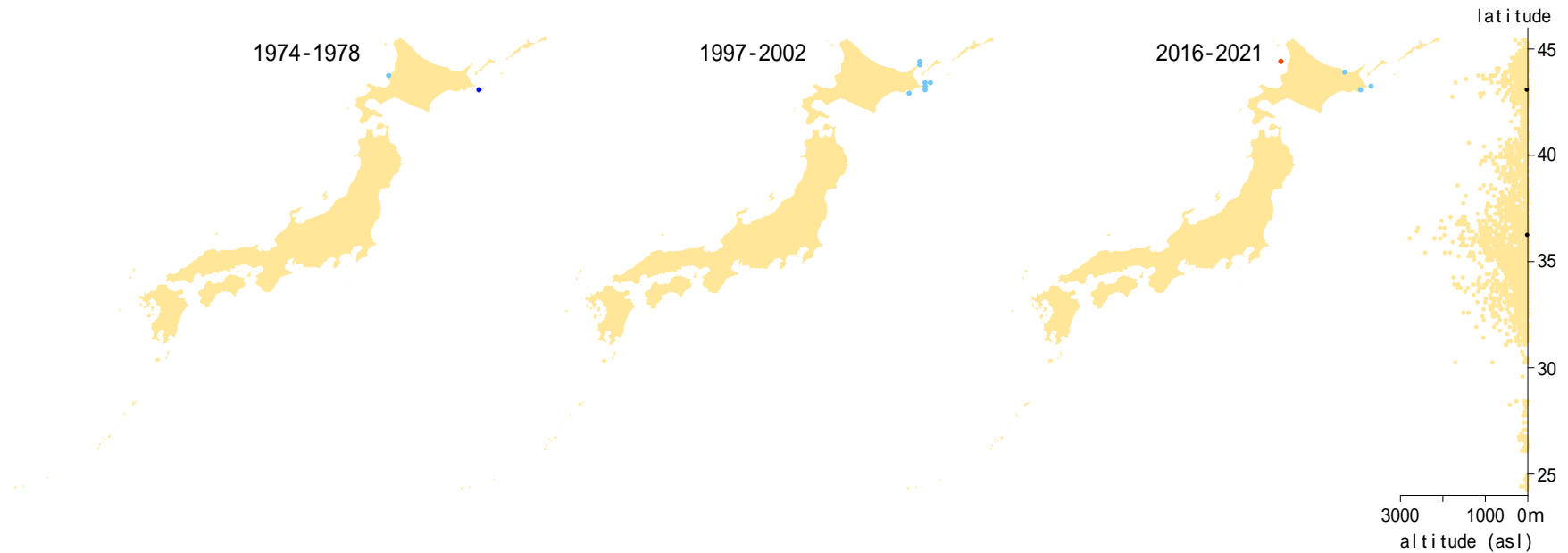
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	1	1
1997-2002	0	0	7
2016-2021	1	0	3

Recorded survey sites	
1997-2002	5
2016-2021	4



Altitudinal distribution
survey sites
recorded sites



Red-faced Cormorant

Phalacrocorax urile

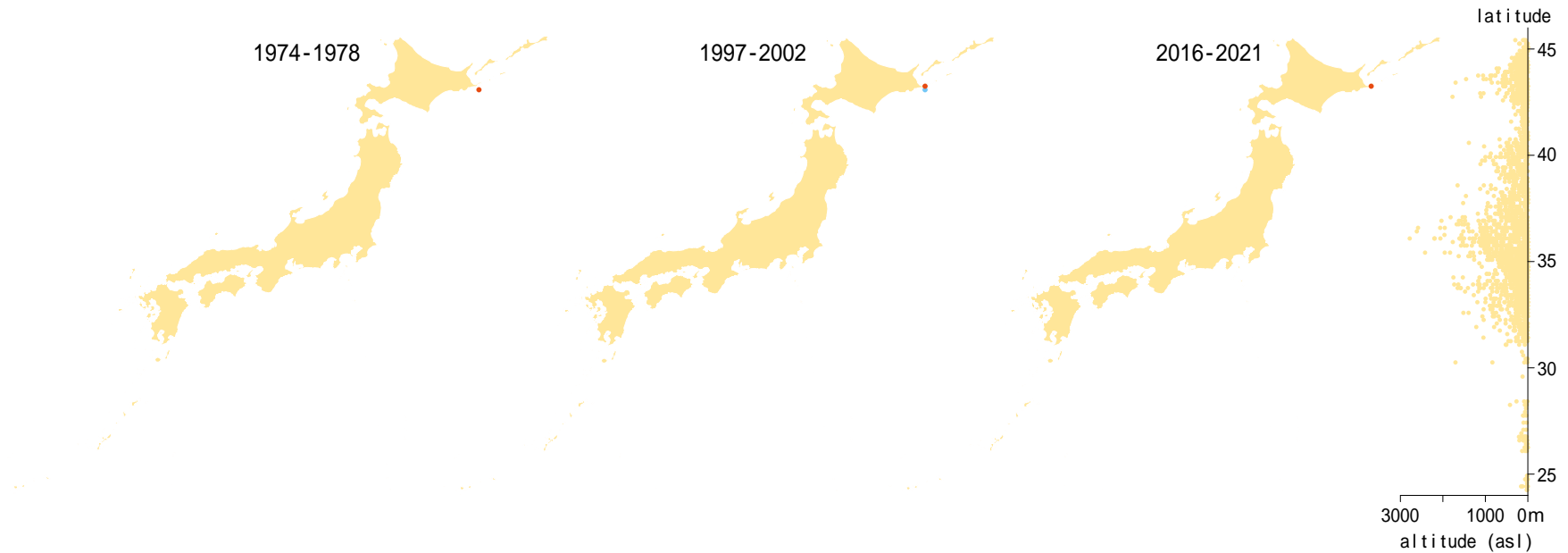
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	0	0
1997-2002	1	0	1
2016-2021	1	0	0

Recorded survey sites	
1997-2002	1
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



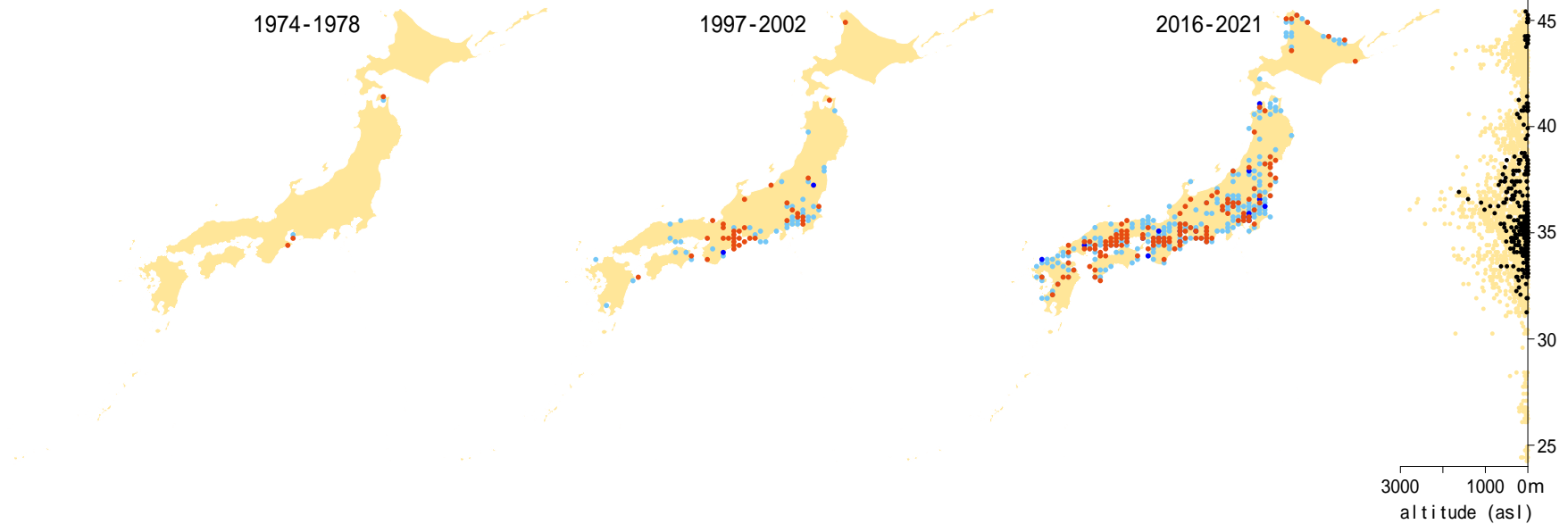
Great Cormorant

Phalacrocorax carbo

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	3	0	2
1997-2002	36	2	43
2016-2021	126	9	166

Recorded survey sites	
1997-2002	104
2016-2021	306



Japanese Cormorant

Phalacrocorax capillatus

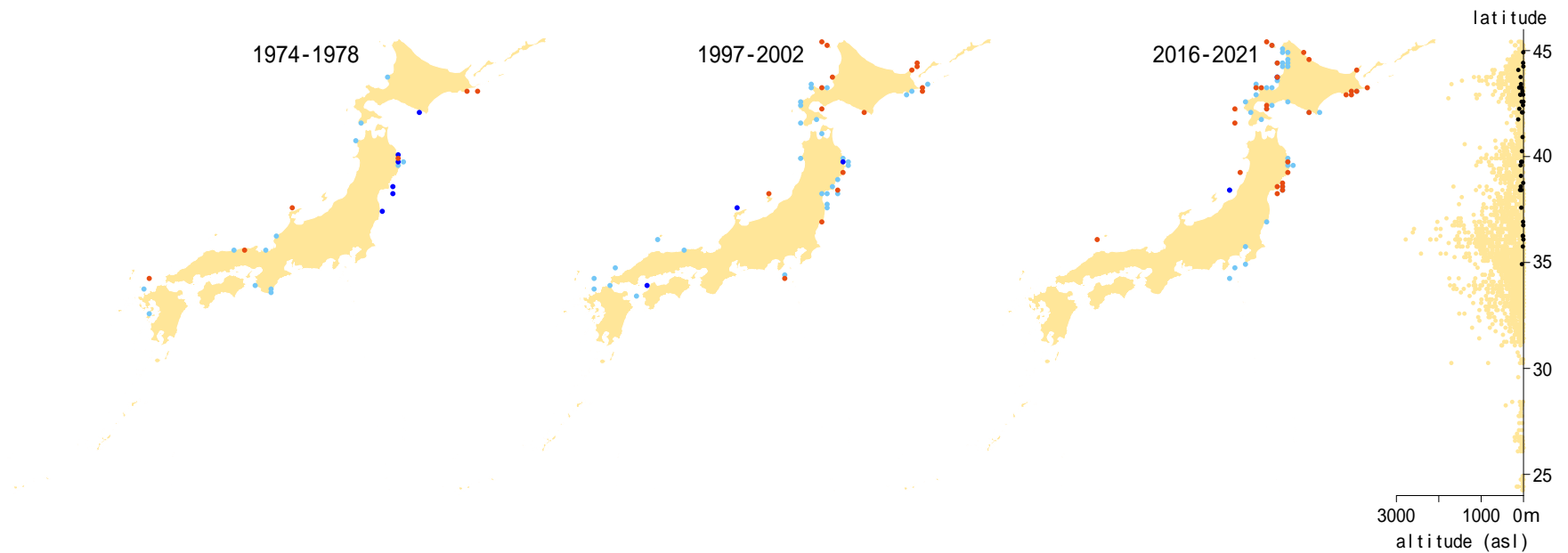
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	6	6	13
1997-2002	16	3	30
2016-2021	28	1	27

Recorded survey sites	
1997-2002	35
2016-2021	30



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Eurasian Bittern

Botaurus stellaris

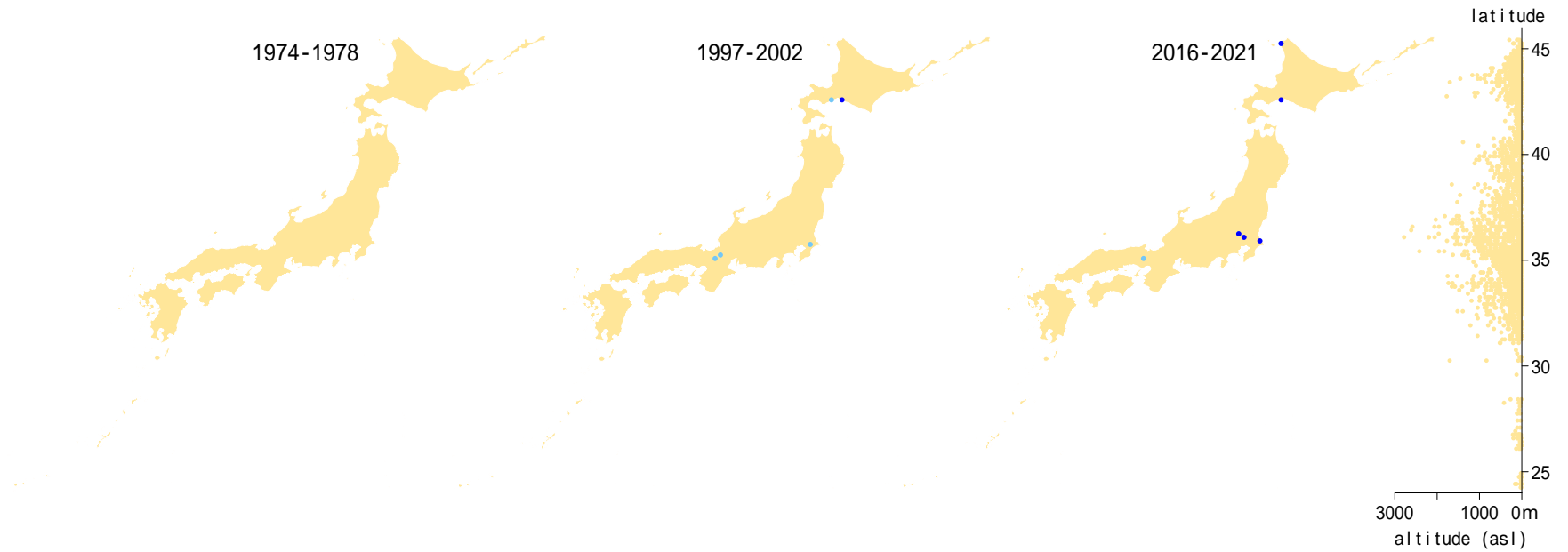
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	1	4
2016-2021	0	5	2

Recorded survey sites	
1997-2002	2
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Yellow Bittern

Ixobrychus sinensis

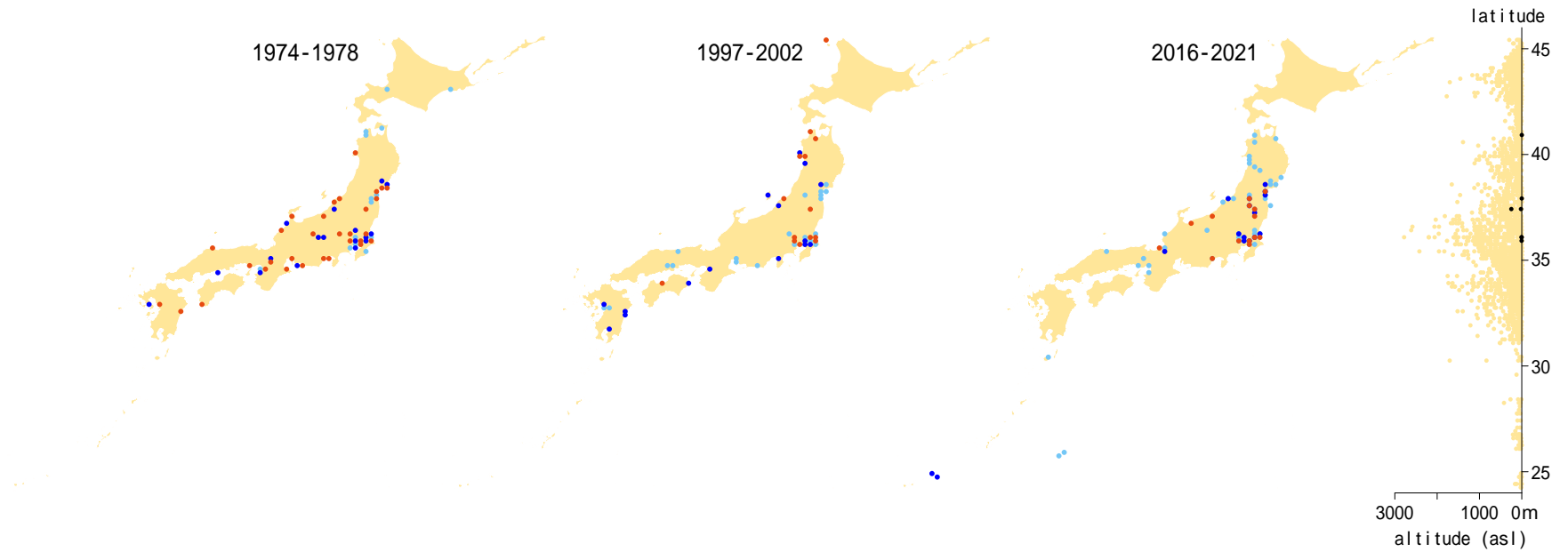
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	31	17	14
1997-2002	14	15	20
2016-2021	14	11	33

Recorded survey sites	
1997-2002	8
2016-2021	4



Altitudinal distribution
survey sites
recorded sites



Von Schrenck's Bittern

Ixobrychus eurhythmus

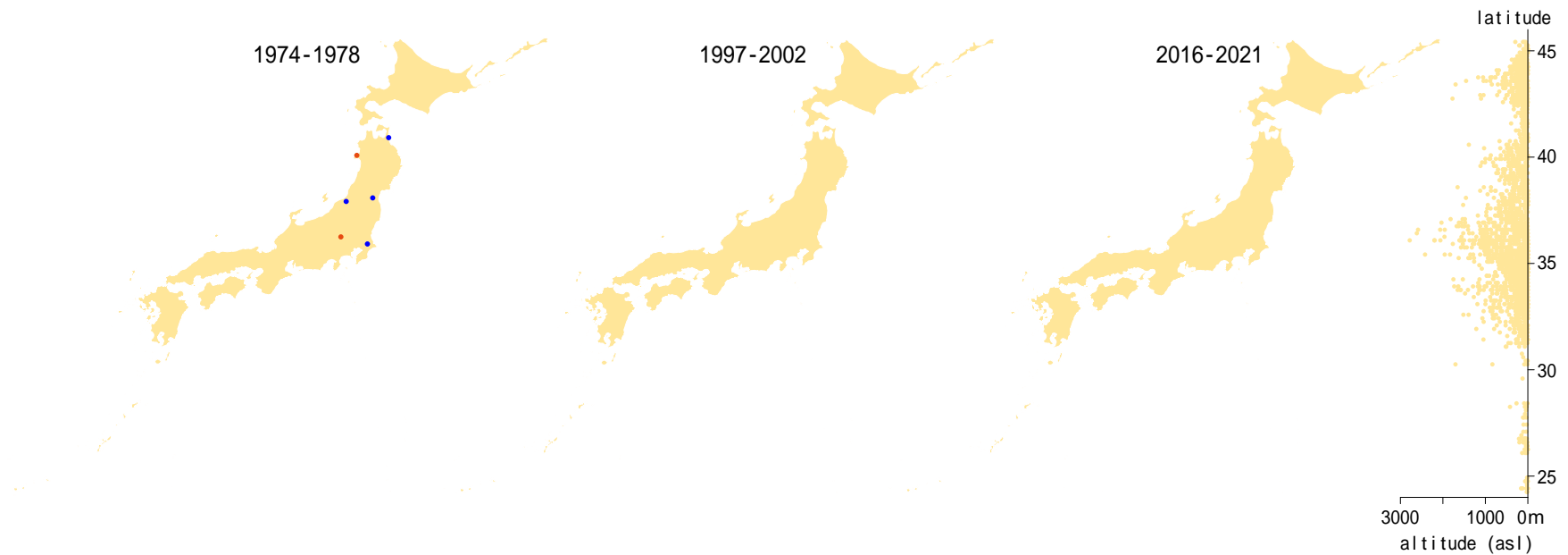
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	4	0
1997-2002	0	0	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Cinnamon Bittern

Ixobrychus cinnamomeus

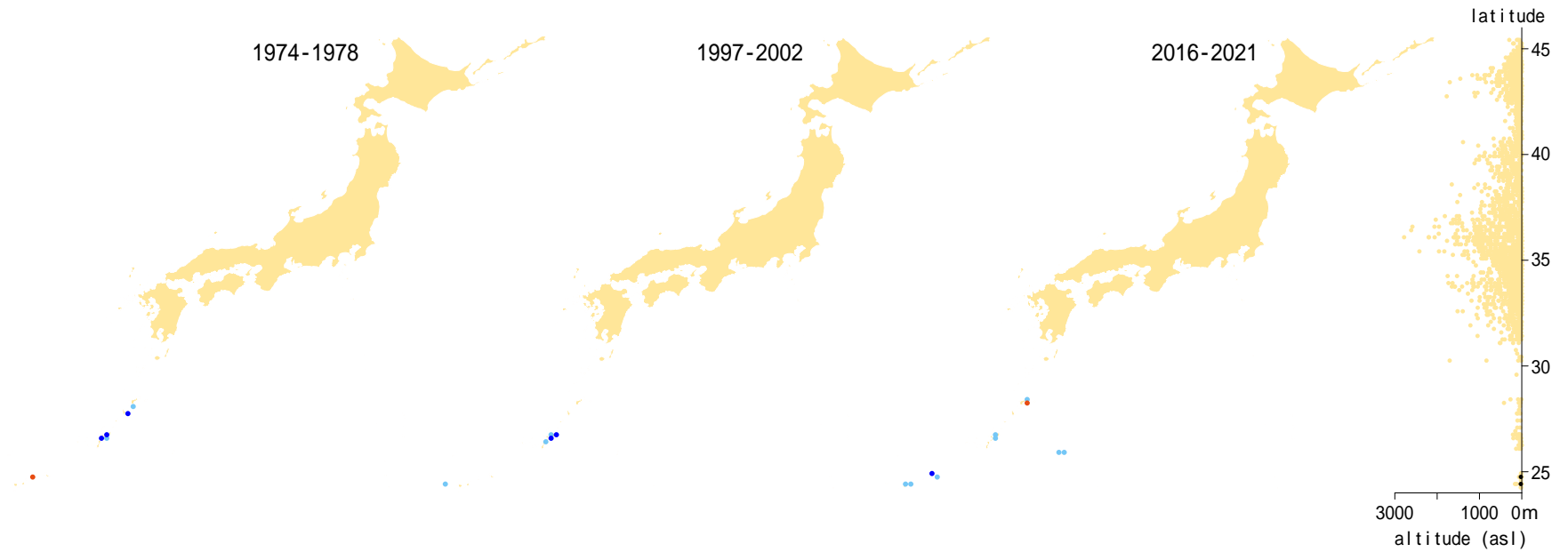
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	3	2
1997-2002	0	2	3
2016-2021	1	1	8

Recorded survey sites	
1997-2002	1
2016-2021	2



Altitudinal distribution
survey sites
recorded sites



Japanese Night Heron

Gorsachius goisagi

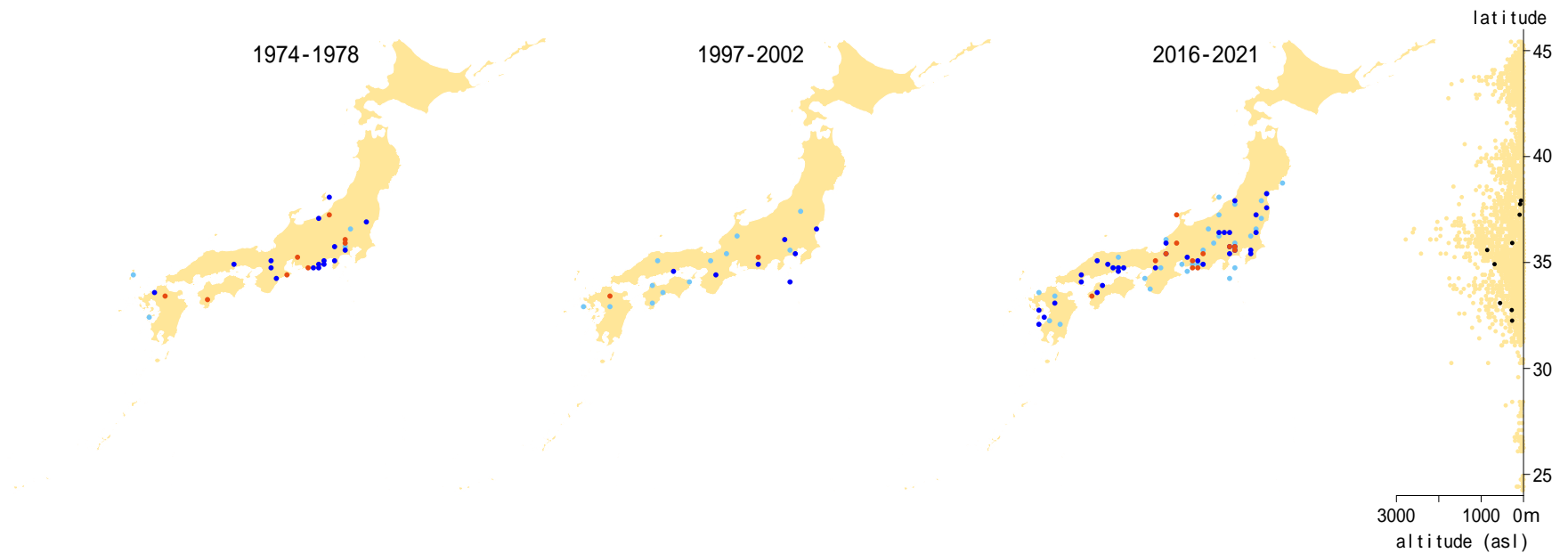
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	8	16	4
1997-2002	2	7	12
2016-2021	12	30	28

Recorded survey sites	
1997-2002	4
2016-2021	7



Altitudinal distribution
survey sites
recorded sites



Malaysian Night Heron

Gorsachius melanolophus

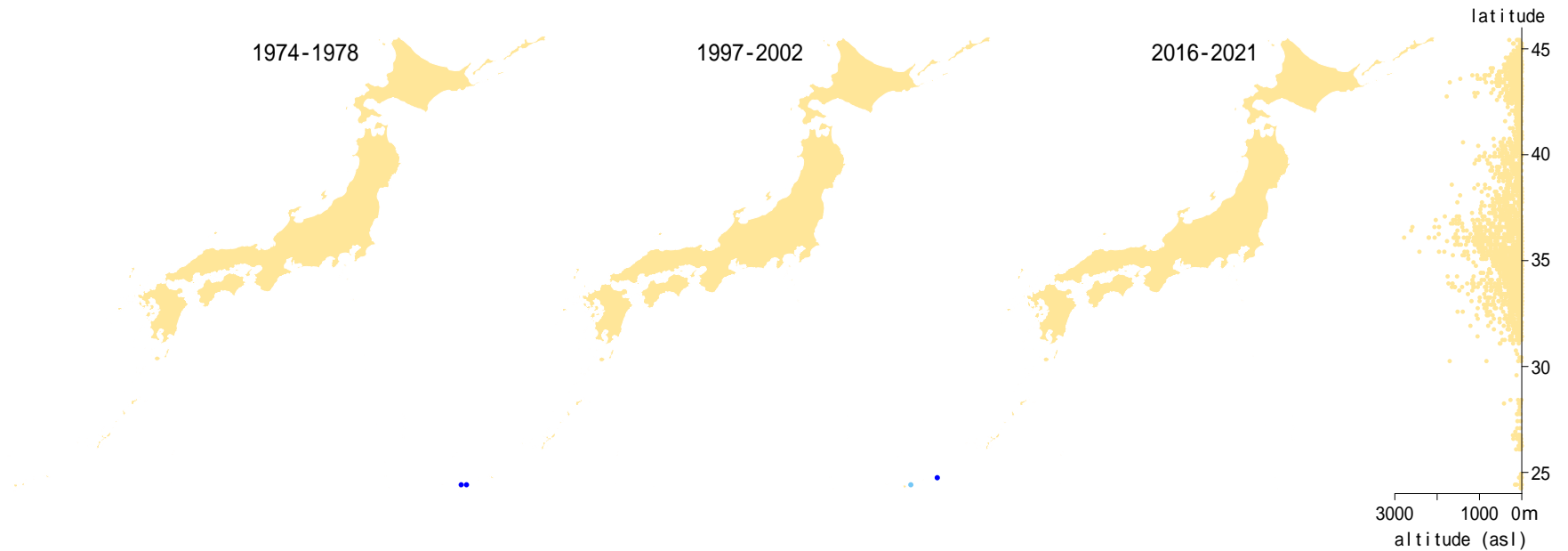
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	2	0
2016-2021	0	1	1

Recorded survey sites	
1997-2002	3
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Black-crowned Night Heron

Nycticorax nycticorax

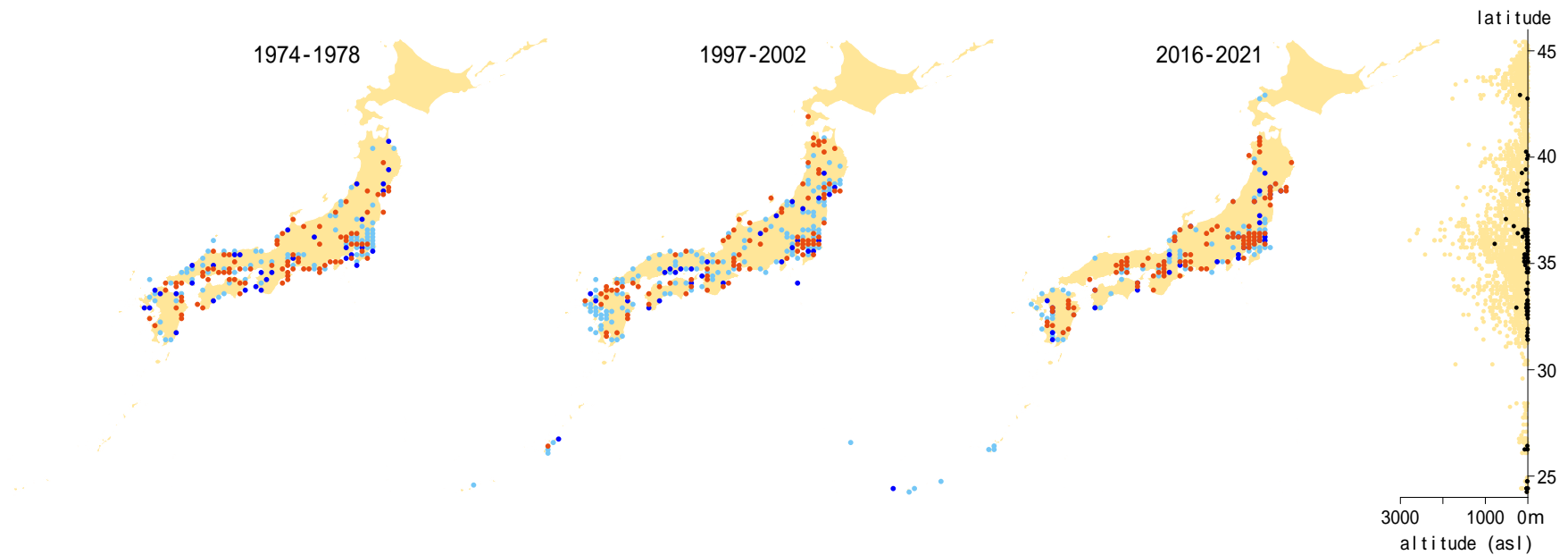
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	83	33	80
1997-2002	89	30	131
2016-2021	98	18	64

Recorded survey sites	
1997-2002	236
2016-2021	93



Altitudinal distribution
survey sites
recorded sites



Striated Heron

Butorides striata

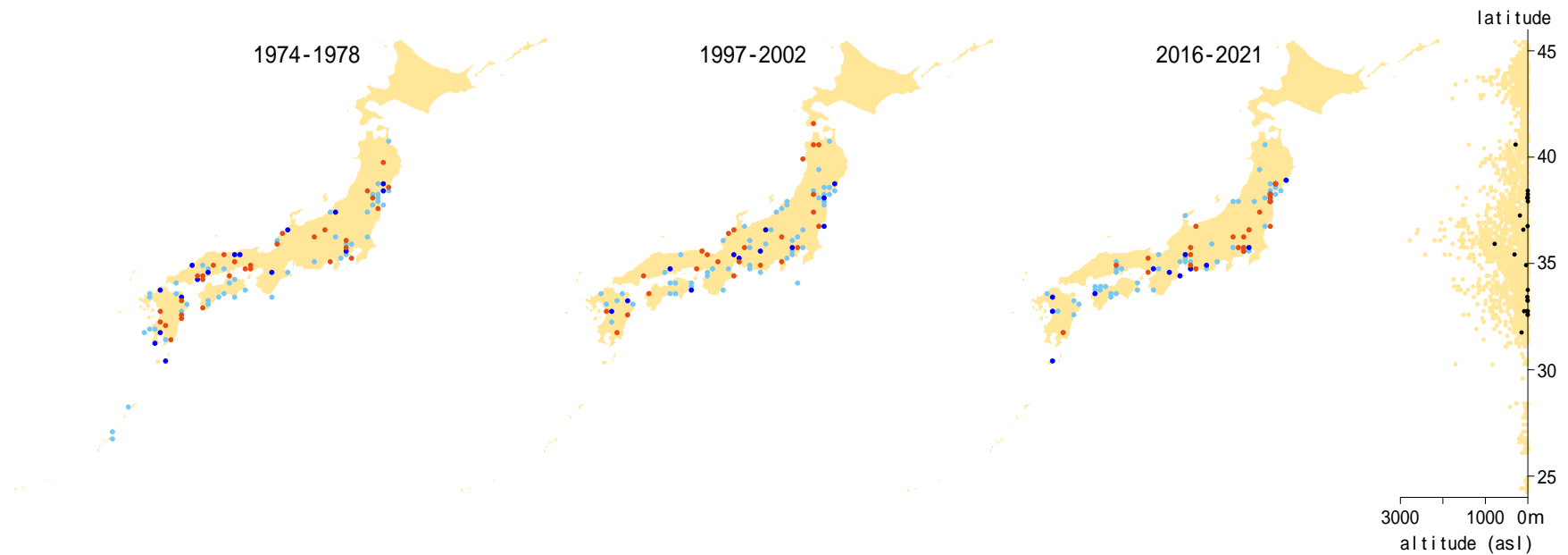
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	31	16	45
1997-2002	25	12	51
2016-2021	21	12	44

Recorded survey sites	
1997-2002	45
2016-2021	20



Altitudinal distribution
survey sites
recorded sites



Chinese Pond Heron

Ardeola bacchus

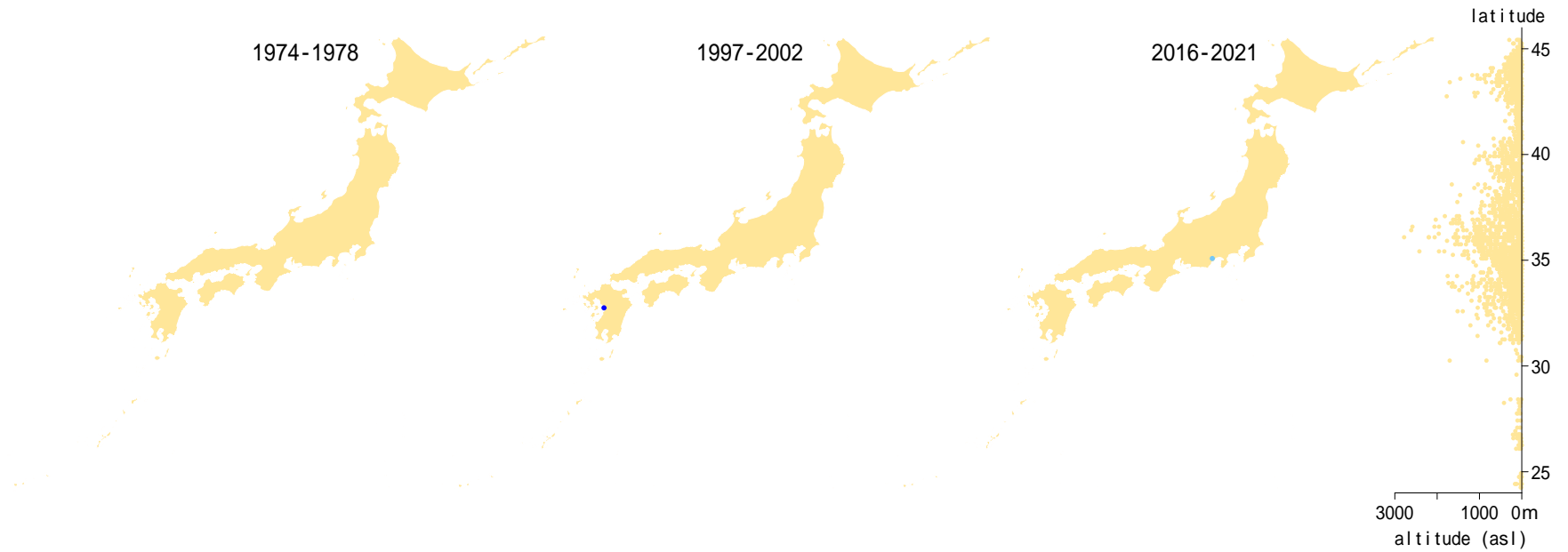
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	0	1	0
2016-2021	0	0	1

Recorded survey sites	
1997-2002	0
2016-2021	5



Altitudinal distribution
survey sites
recorded sites



Eastern Cattle Egret

Bubulcus ibis

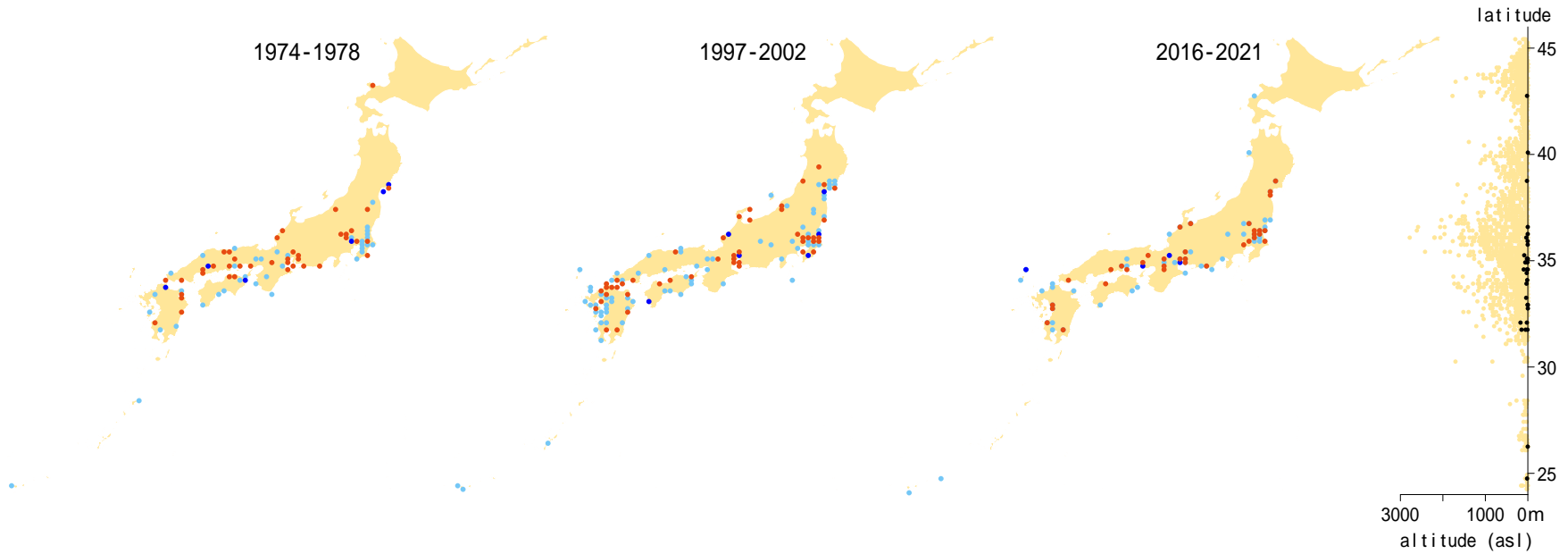
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	40	6	37
1997-2002	47	6	72
2016-2021	34	4	33

Recorded survey sites	
1997-2002	117
2016-2021	38



Altitudinal distribution
survey sites
recorded sites



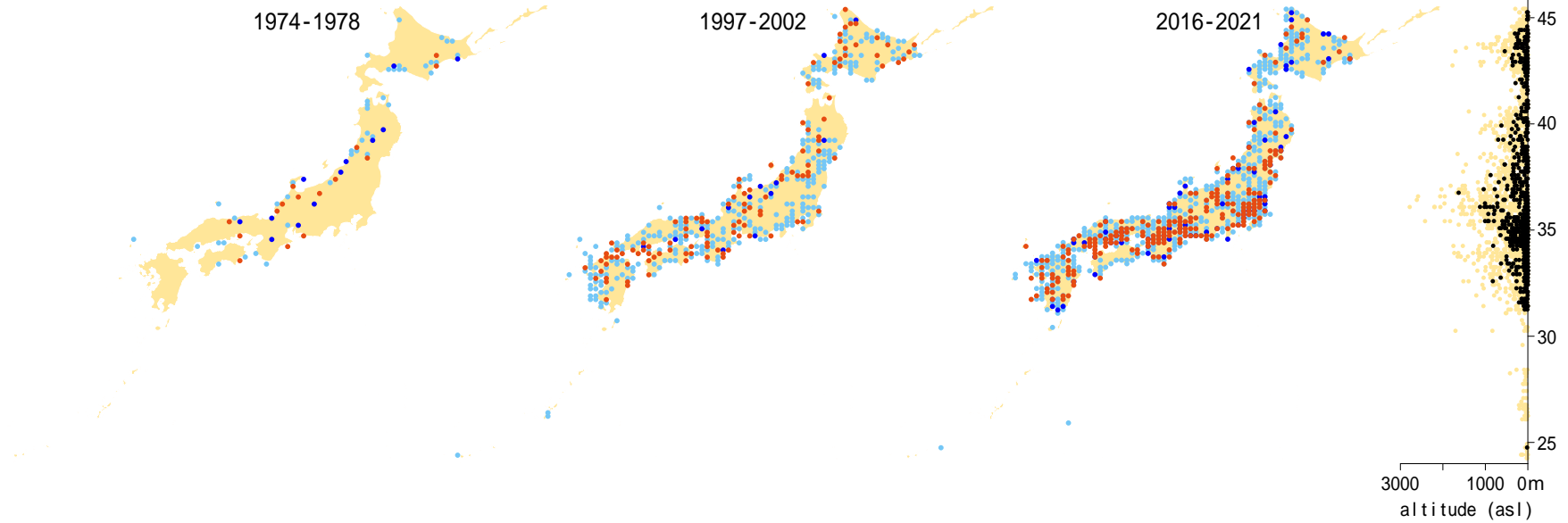
Grey Heron

Ardea cinerea

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	15	12	42
1997-2002	114	13	293
2016-2021	223	42	366

Recorded survey sites	
1997-2002	527
2016-2021	668



Purple Heron

Ardea purpurea

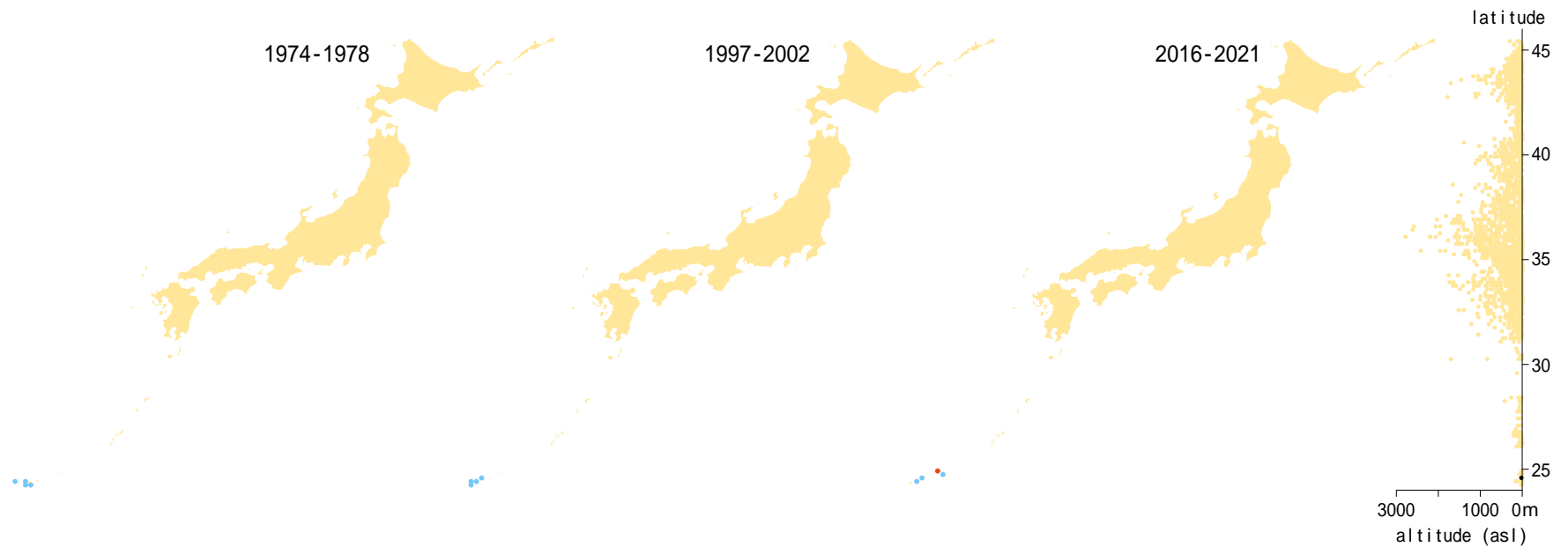
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	4
1997-2002	0	0	4
2016-2021	1	0	3

Recorded survey sites	
1997-2002	4
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



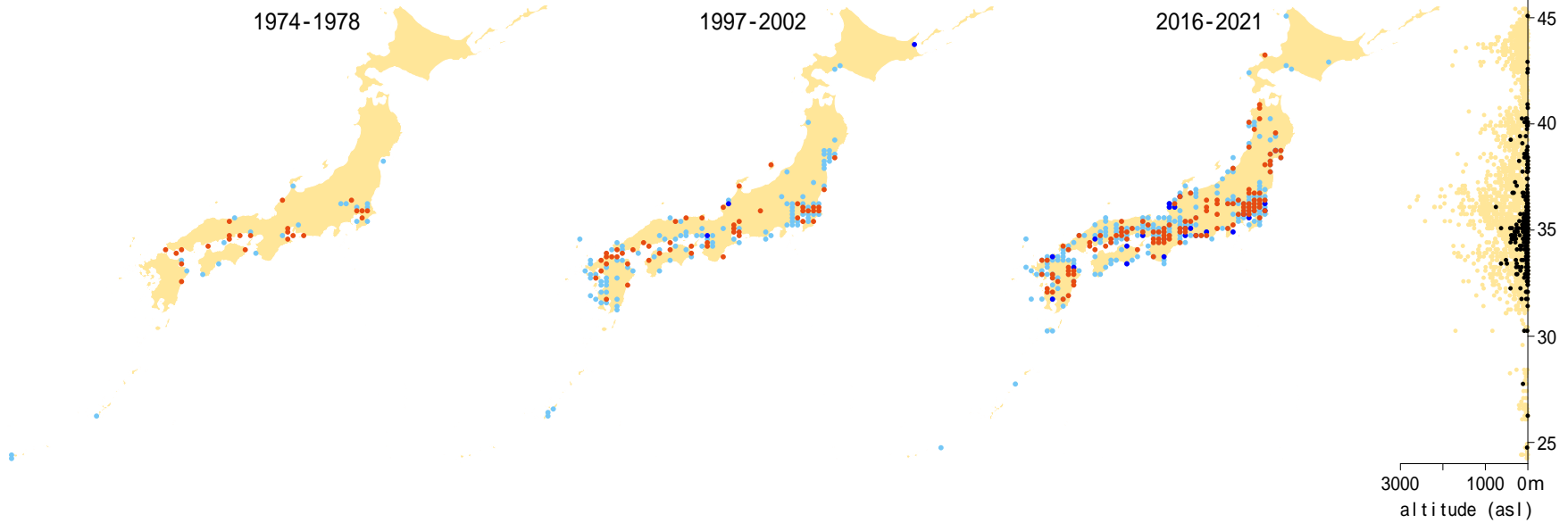
Great Egret

Ardea alba

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	23	0	22
1997-2002	51	3	106
2016-2021	121	17	149

Recorded survey sites	
1997-2002	183
2016-2021	272



Intermediate Egret

Egretta intermedia

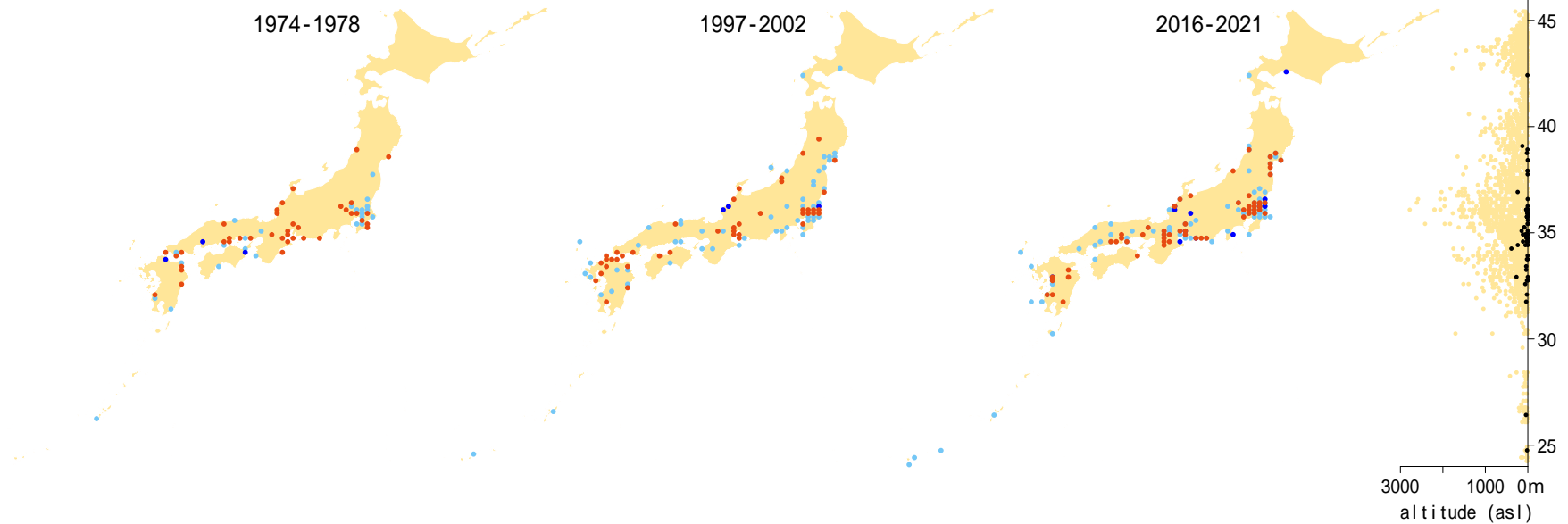
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	39	3	24
1997-2002	42	3	56
2016-2021	56	7	48

Recorded survey sites	
1997-2002	95
2016-2021	73



Altitudinal distribution
survey sites
recorded sites



Little Egret

Egretta garzetta

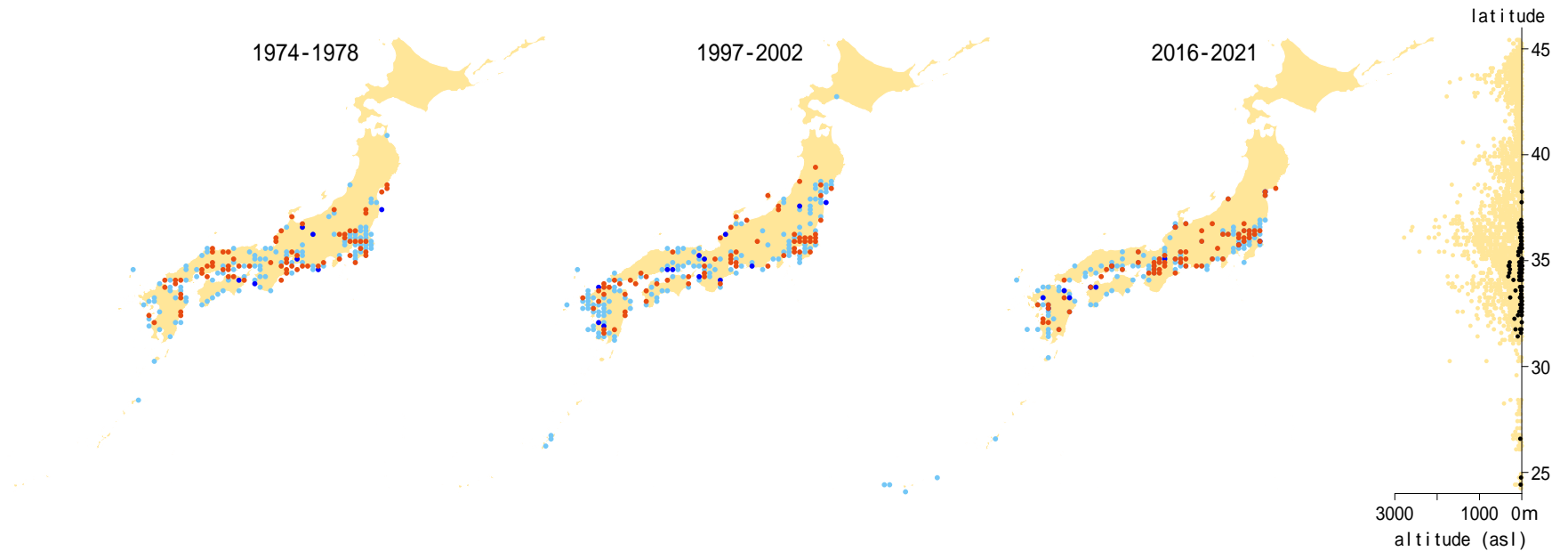
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	71	7	111
1997-2002	69	13	137
2016-2021	67	5	83

Recorded survey sites	
1997-2002	239
2016-2021	93



Altitudinal distribution
survey sites
recorded sites



Pacific Reef Heron

Egretta sacra

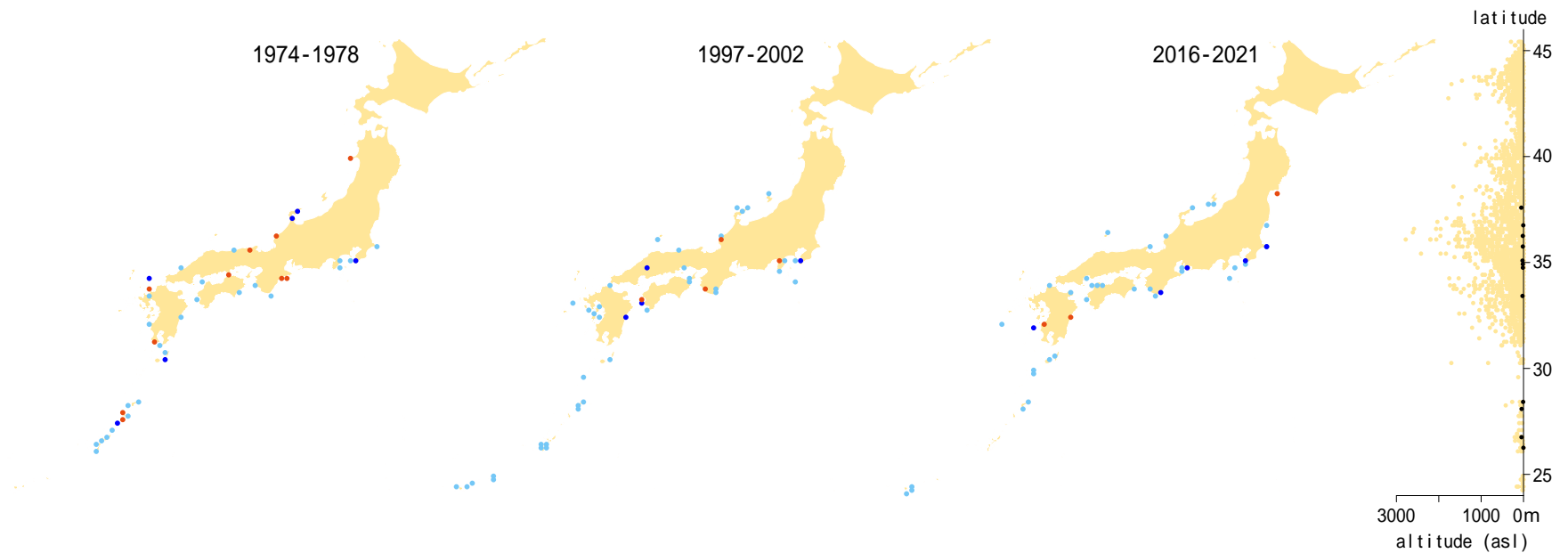
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	10	6	24
1997-2002	4	4	37
2016-2021	3	5	32

Recorded survey sites	
1997-2002	15
2016-2021	9



Altitudinal distribution
survey sites
recorded sites



Crested Ibis

Nipponia nippon

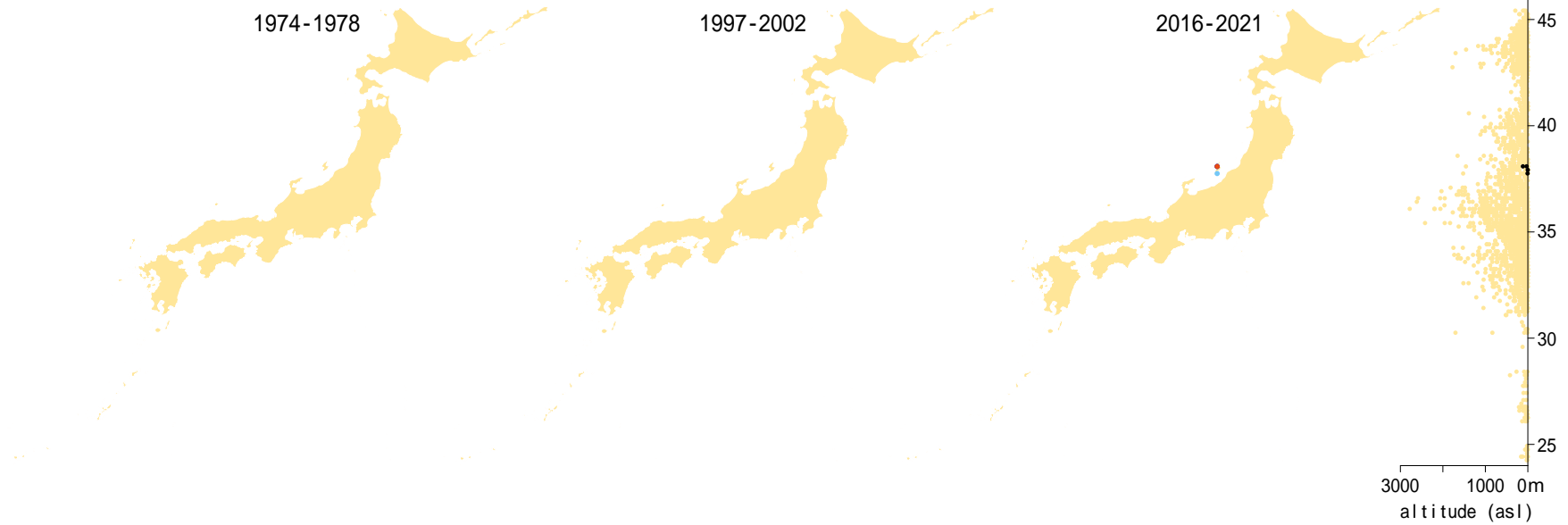
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	0	1

Recorded survey sites	
1997-2002	0
2016-2021	4



Altitudinal distribution
survey sites
recorded sites



Red-crowned Crane

Grus japonensis

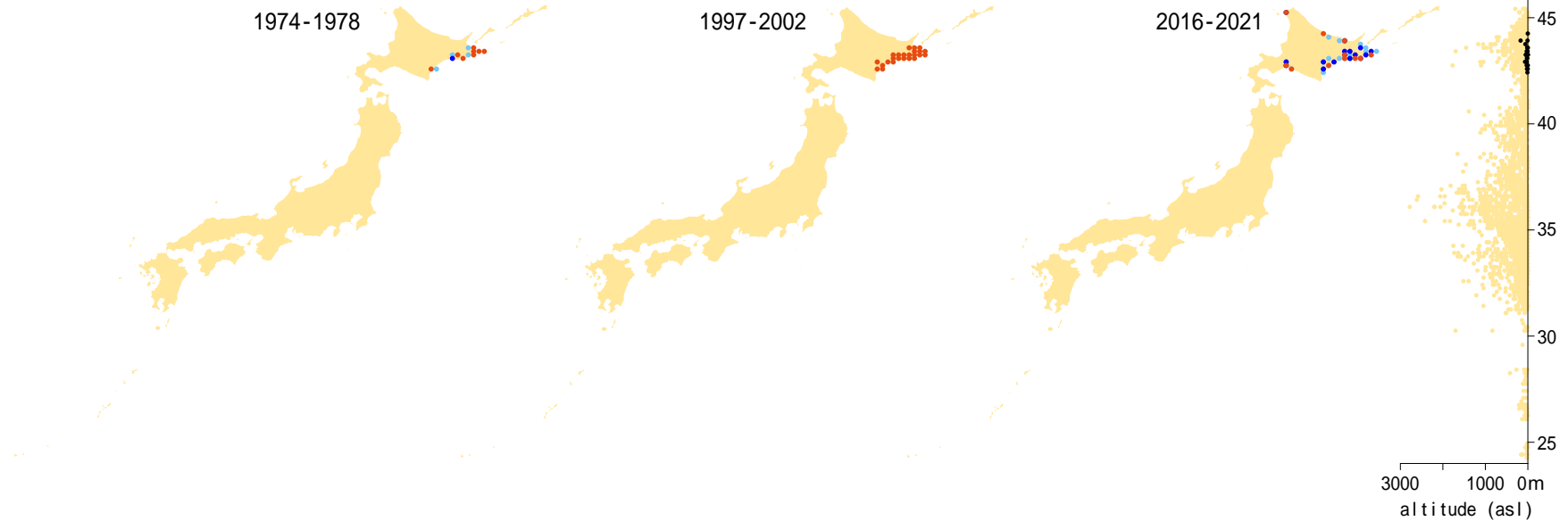
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	8	1	4
1997-2002	24	0	0
2016-2021	11	11	10

Recorded survey sites	
1997-2002	9
2016-2021	21



Altitudinal distribution
survey sites
recorded sites



Swinhoe's Rail

Coturnicops exquisitus

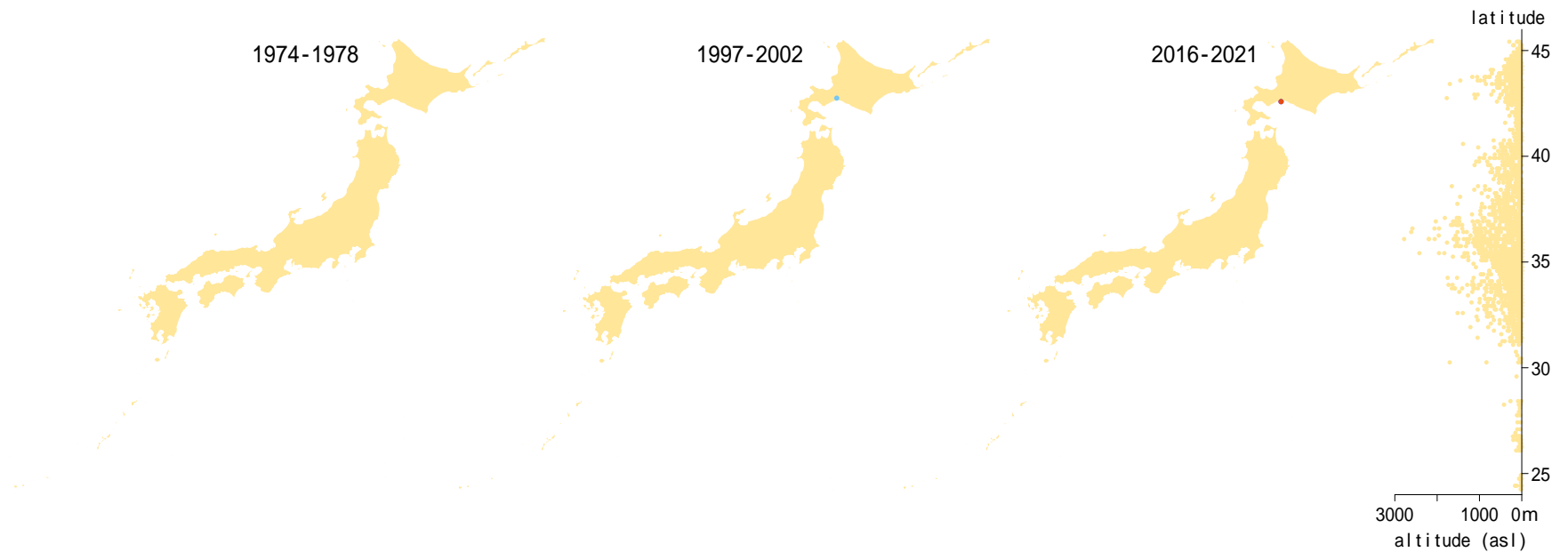
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	1
2016-2021	1	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Slaty-legged Crake

Rallina eurizonoides

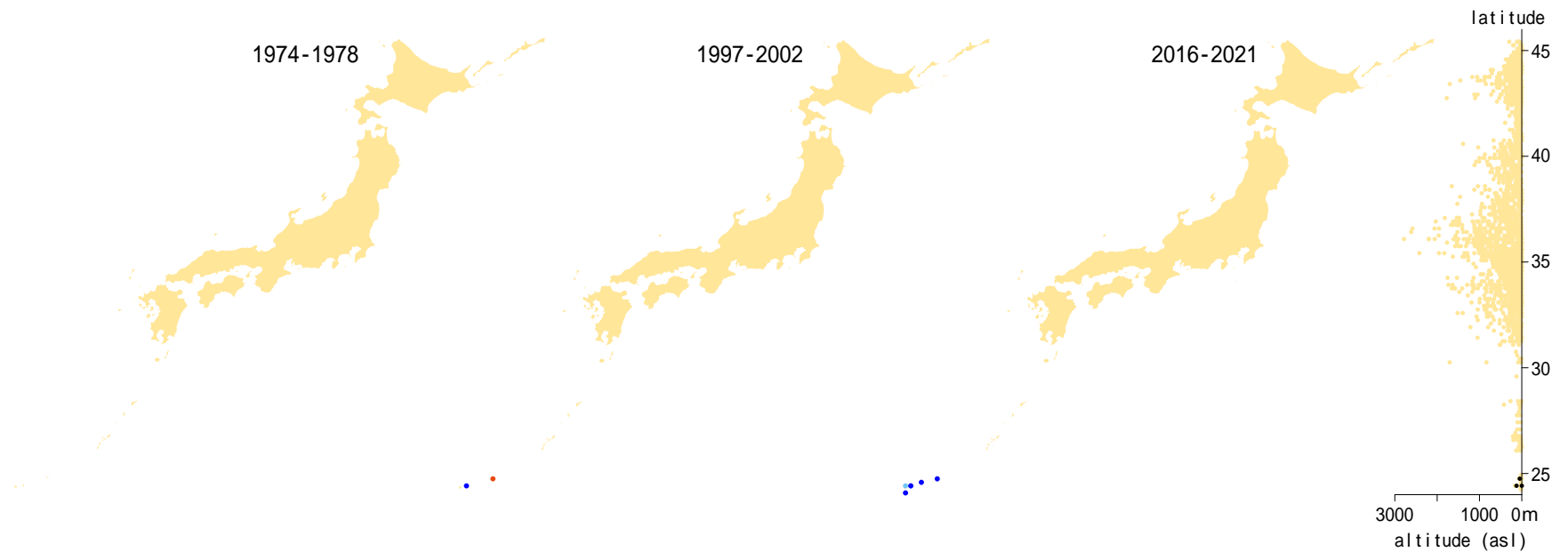
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	1	1	0
2016-2021	0	4	1

Recorded survey sites	
1997-2002	2
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



Okinawa Rail

Gallirallus okinawae

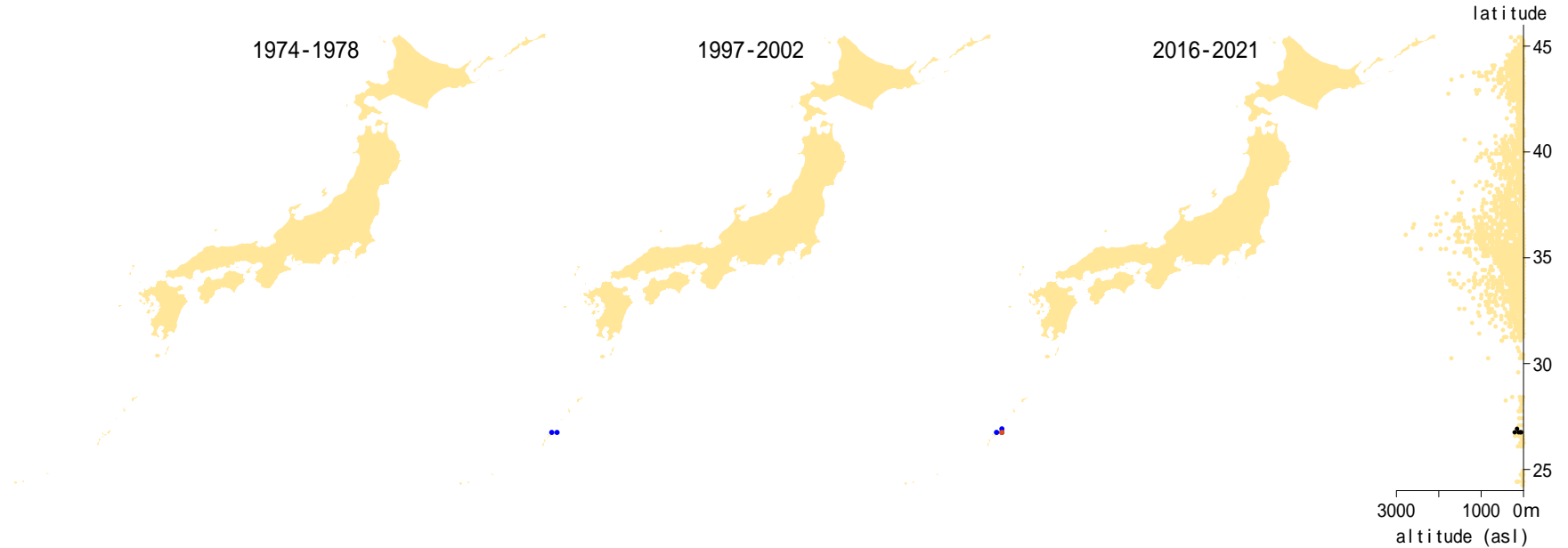
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	2	0
2016-2021	1	2	0

Recorded survey sites	
1997-2002	3
2016-2021	5



Altitudinal distribution
survey sites
recorded sites



Water Rail

Rallus aquaticus

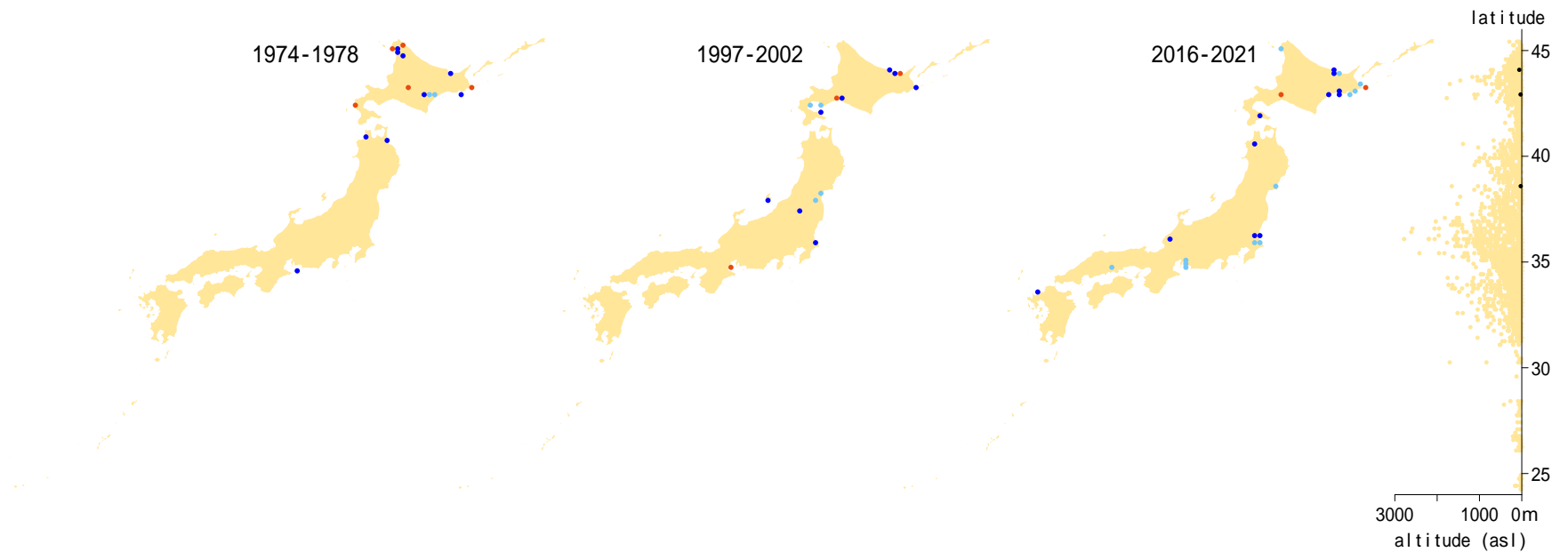
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	5	9	2
1997-2002	3	8	4
2016-2021	2	11	12

Recorded survey sites	
1997-2002	4
2016-2021	4



Altitudinal distribution
survey sites
recorded sites



White-breasted Waterhen

Amaurornis phoenicurus

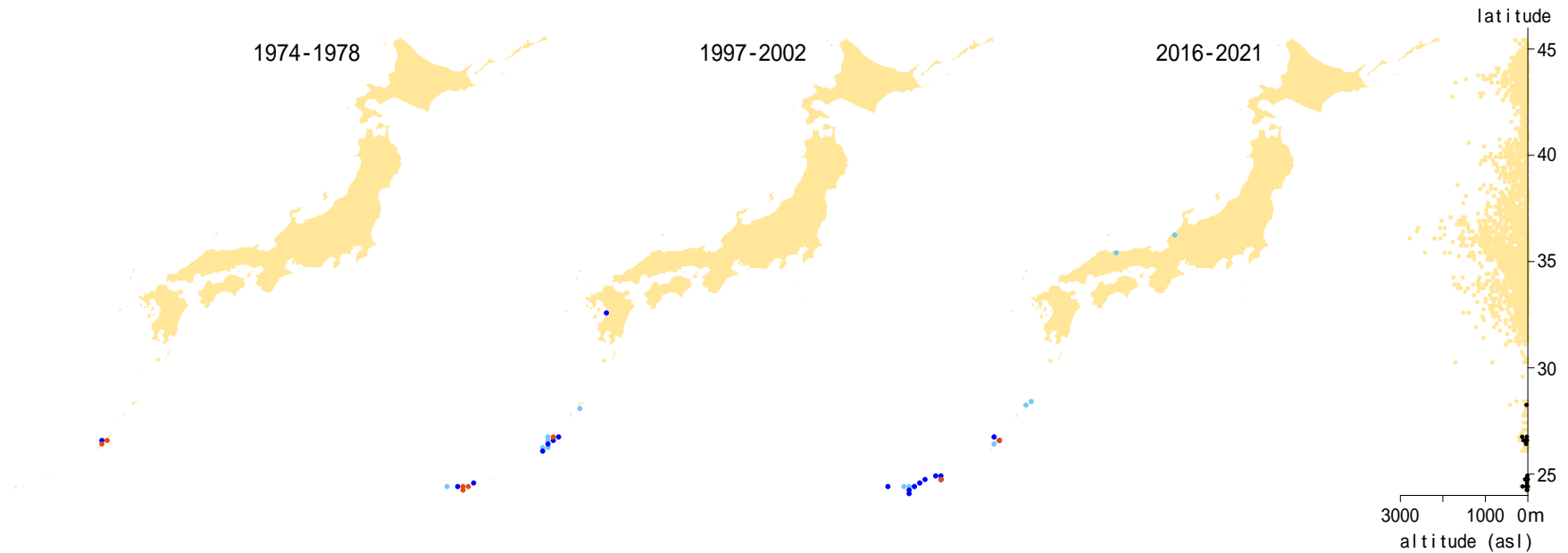
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	1	0
1997-2002	4	7	6
2016-2021	2	10	6

Recorded survey sites	
1997-2002	22
2016-2021	21



Altitudinal distribution
survey sites
recorded sites



Baillon's Crane

Porzana pusilla

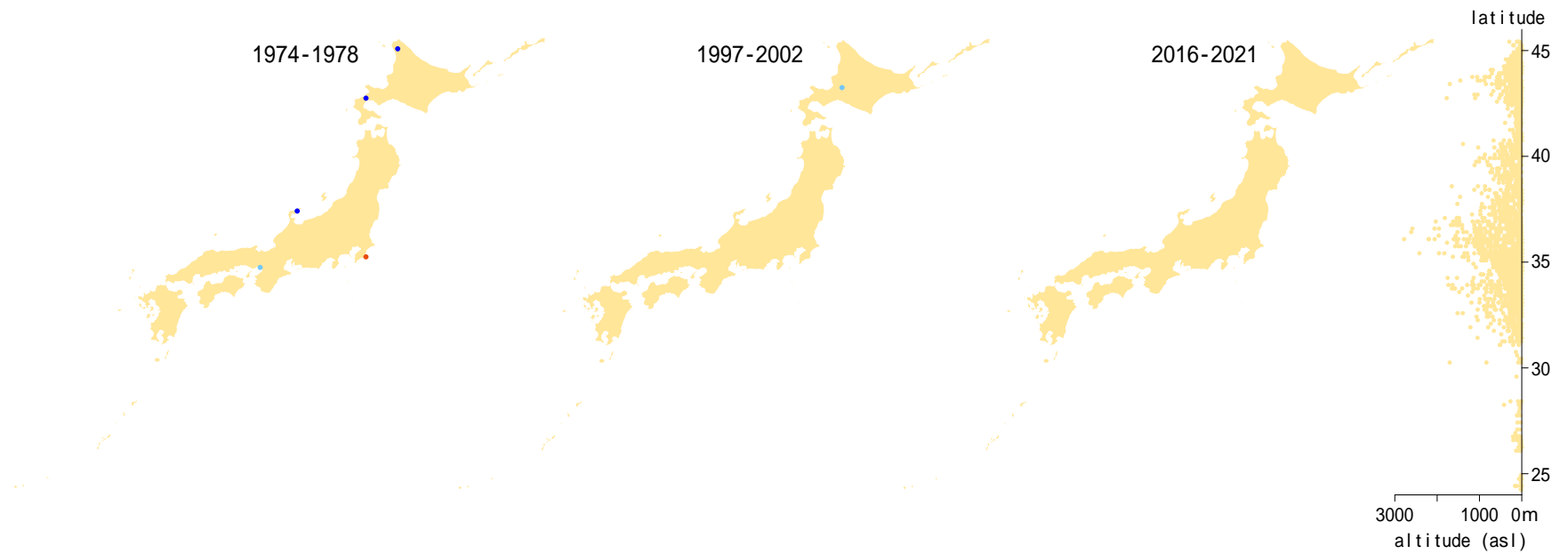
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	3	1
1997-2002	0	0	1
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Ruddy-breasted Crane

Porzana fusca

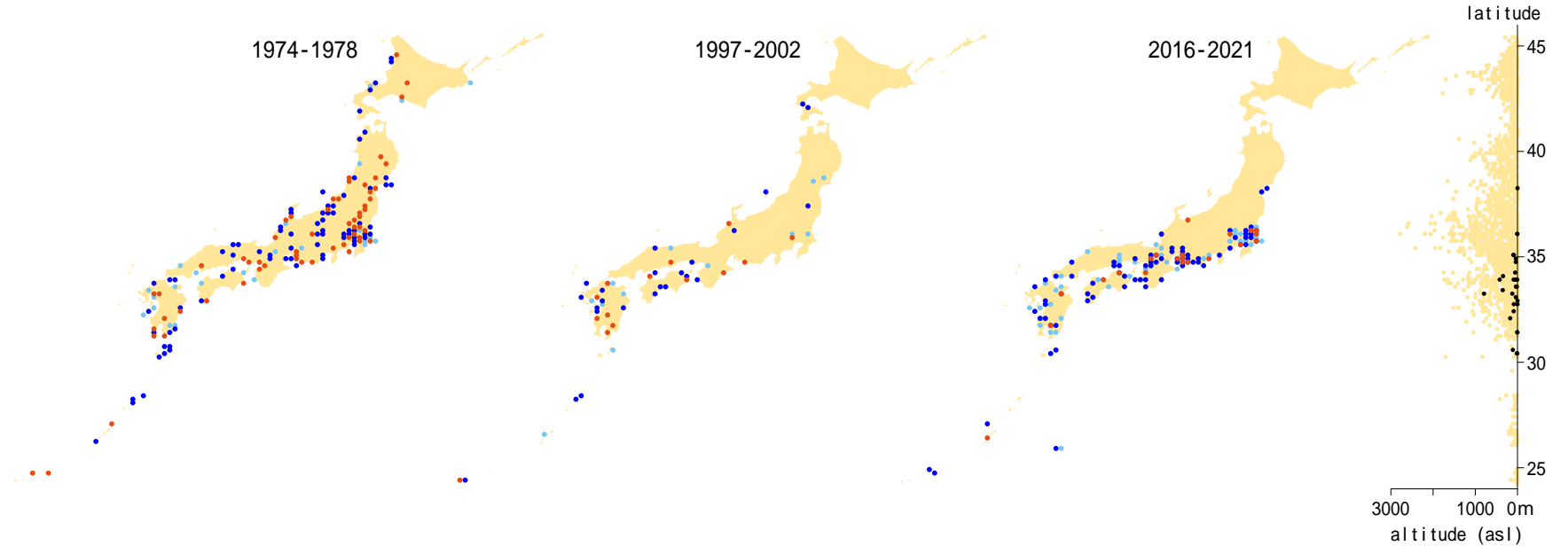
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	59	76	24
1997-2002	14	24	12
2016-2021	21	64	38

Recorded survey sites	
1997-2002	19
2016-2021	29



Altitudinal distribution
survey sites
recorded sites



Common Moorhen

Gallinula chloropus

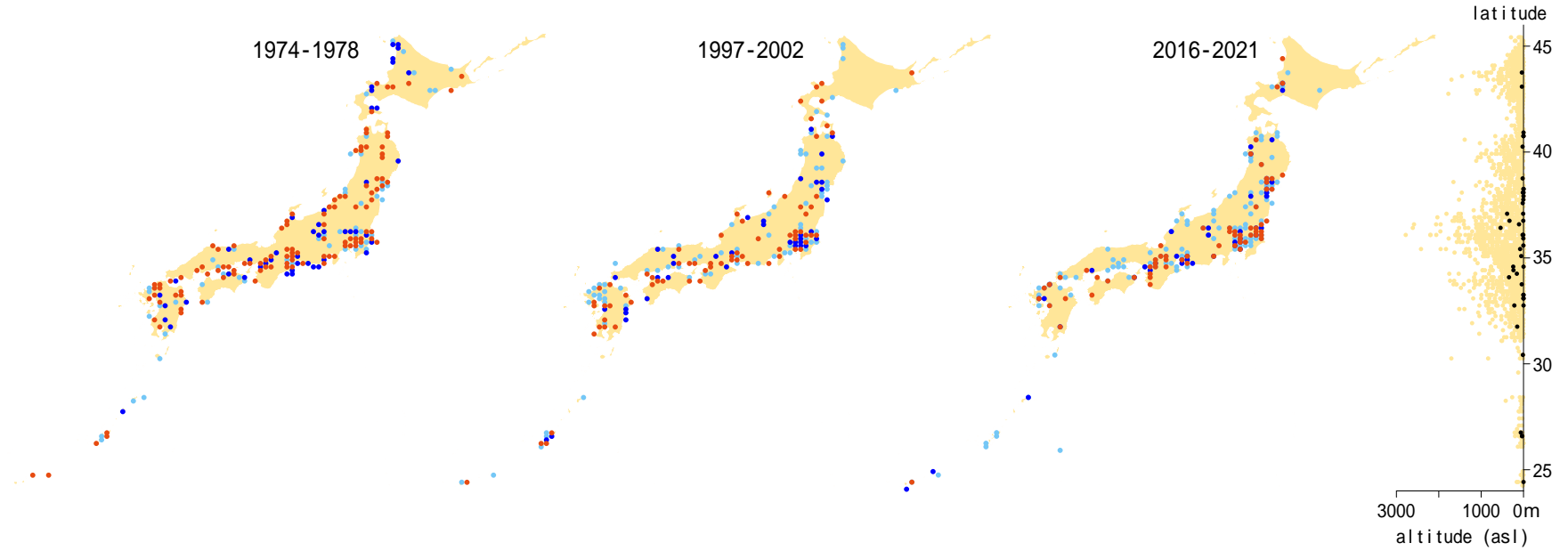
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	111	48	52
1997-2002	71	37	74
2016-2021	64	24	85

Recorded survey sites	
1997-2002	87
2016-2021	42



Altitudinal distribution
survey sites
recorded sites



Eurasian Coot

Fulica atra

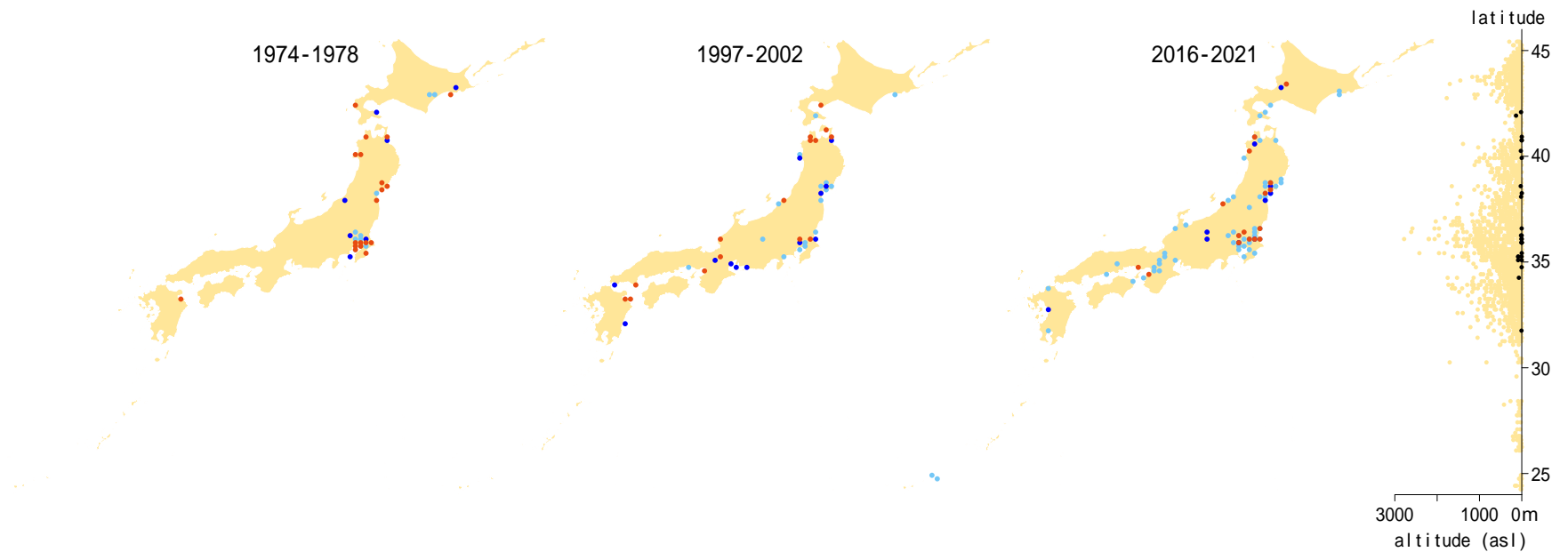
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	19	7	8
1997-2002	15	12	16
2016-2021	16	8	50

Recorded survey sites	
1997-2002	21
2016-2021	30



Altitudinal distribution
survey sites
recorded sites



Asian Koels

Eudynamys scolopaceus

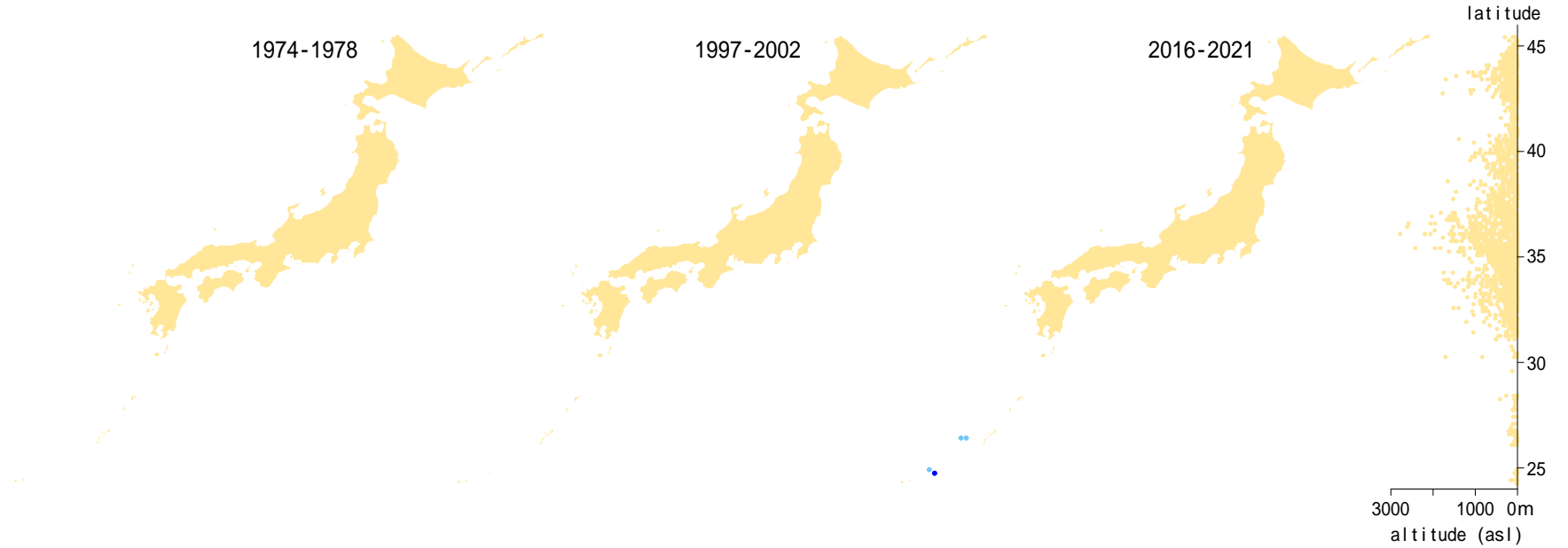
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	1	3

Recorded survey sites	
1997-2002	0
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



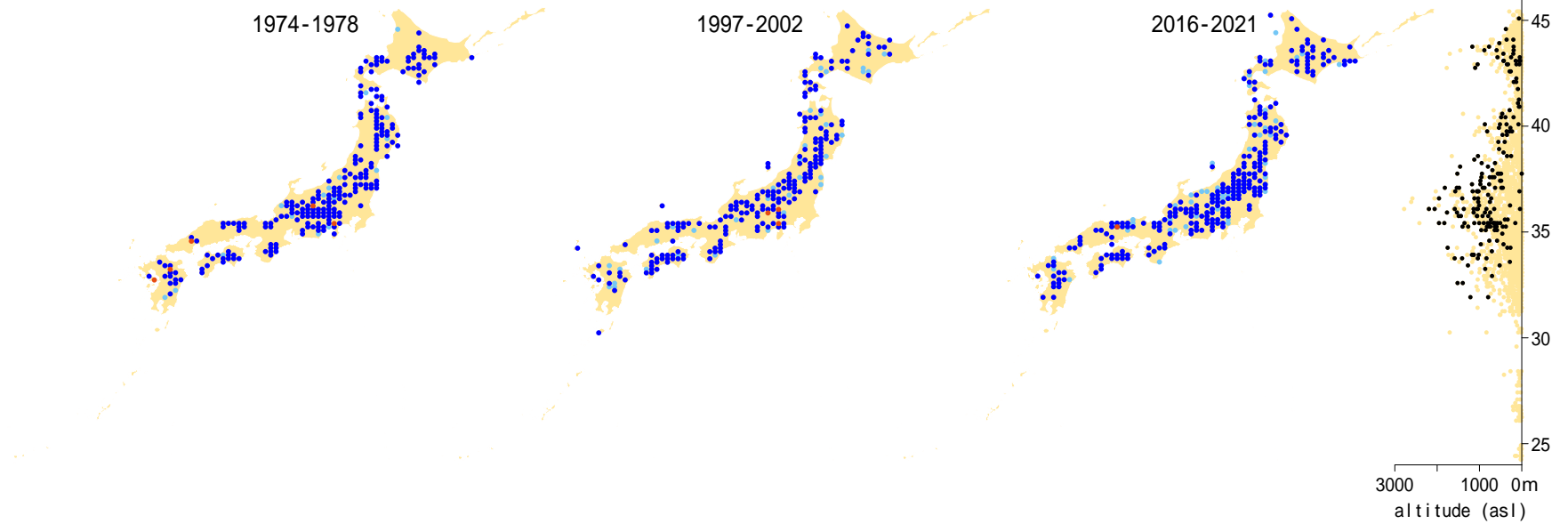
Hodgson's Hawk-cuckoo

Hierococcyx hyperythrus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	5	225	16
1997-2002	3	199	34
2016-2021	1	250	43

Recorded survey sites	
1997-2002	159
2016-2021	156



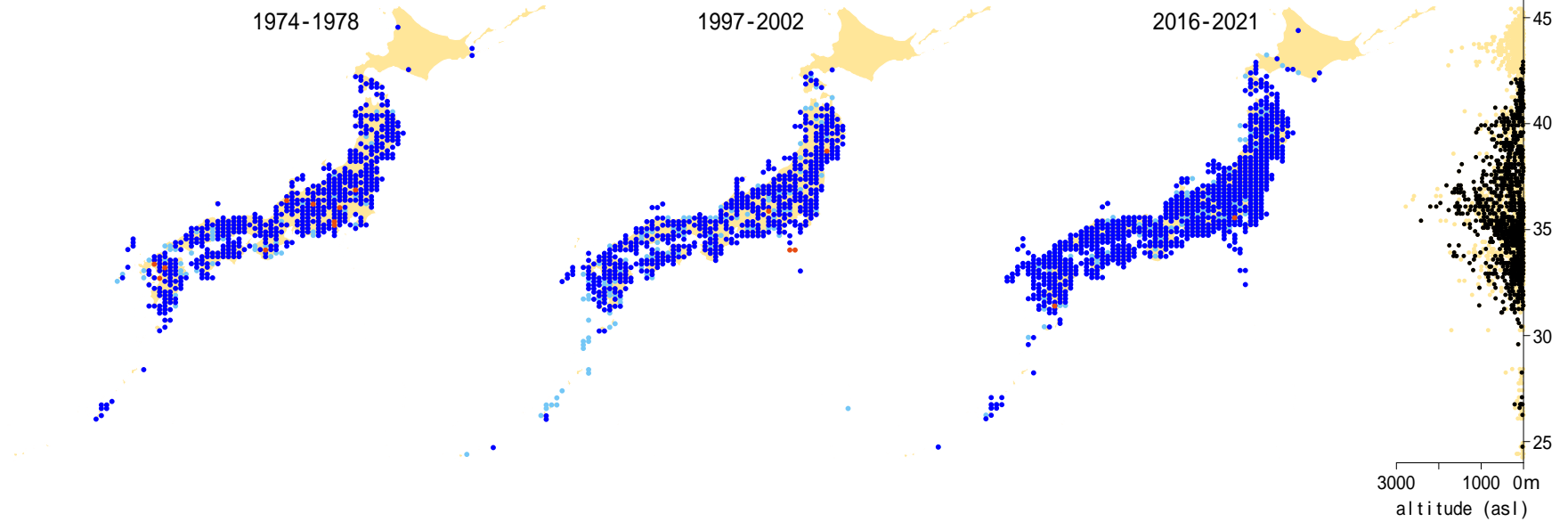
Lesser Cuckoo

Cuculus poliocephalus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	10	525	46
1997-2002	4	529	98
2016-2021	2	769	58

Recorded survey sites	
1997-2002	560
2016-2021	815



Indian Cuckoo

Cuculus micropterus

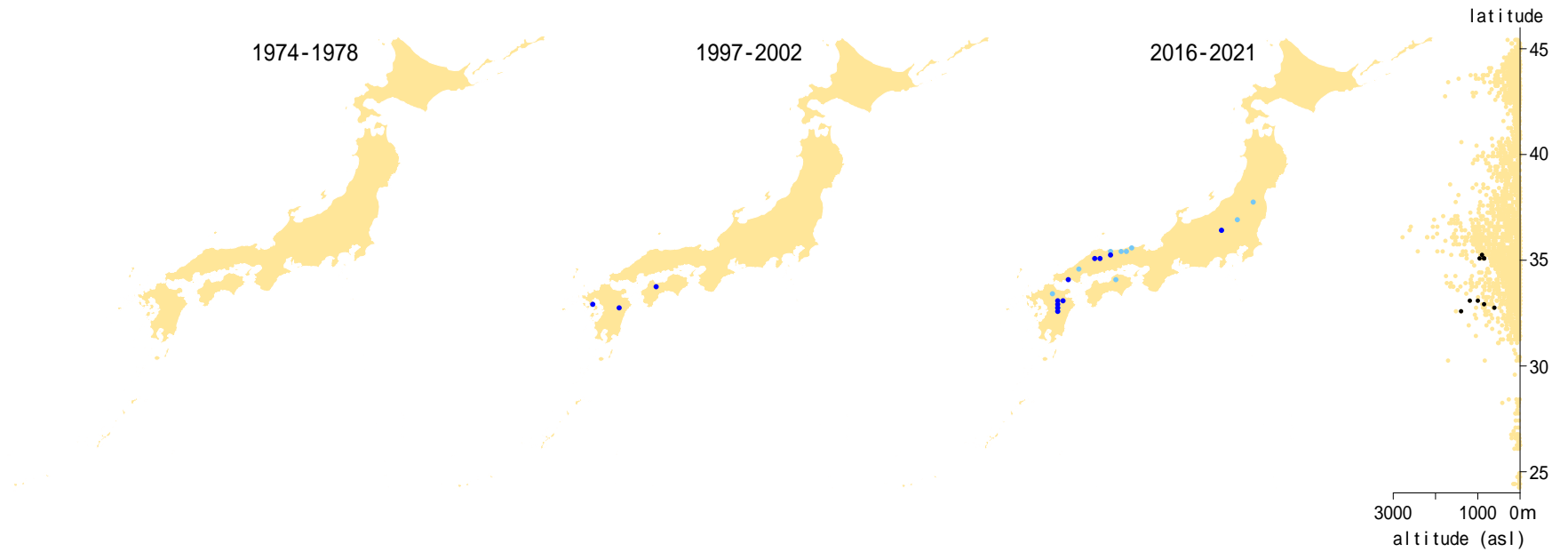
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	0	3	0
2016-2021	0	10	9

Recorded survey sites	
1997-2002	1
2016-2021	9



Altitudinal distribution
survey sites
recorded sites



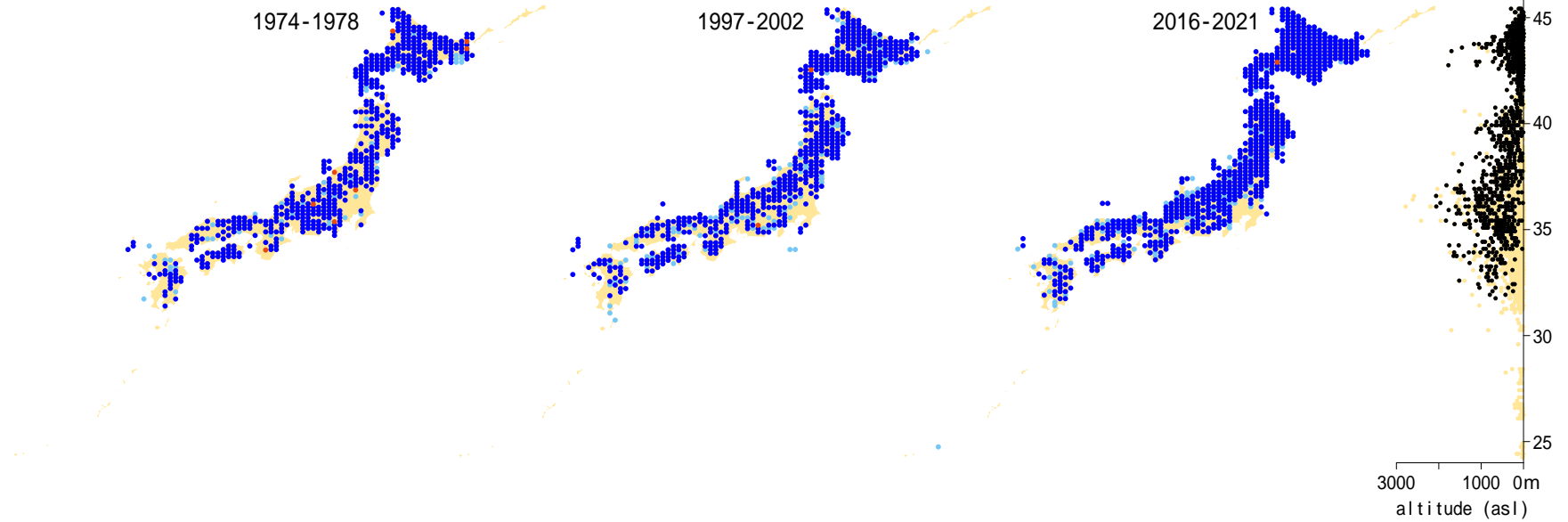
Oriental Cuckoo

Cuculus optatus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	8	533	45
1997-2002	2	585	88
2016-2021	1	721	66

Recorded survey sites	
1997-2002	754
2016-2021	849



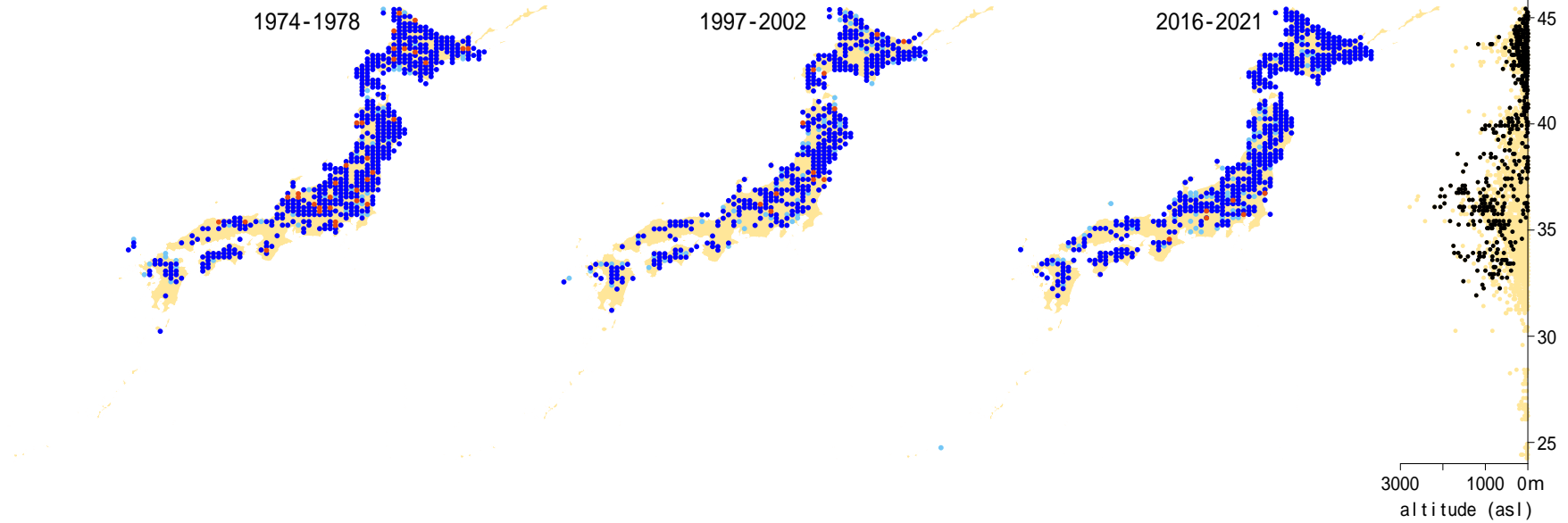
Common Cuckoo

Cuculus canorus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	34	541	41
1997-2002	12	410	58
2016-2021	6	497	58

Recorded survey sites	
1997-2002	423
2016-2021	464



Grey Nightjar

Caprimulgus indicus

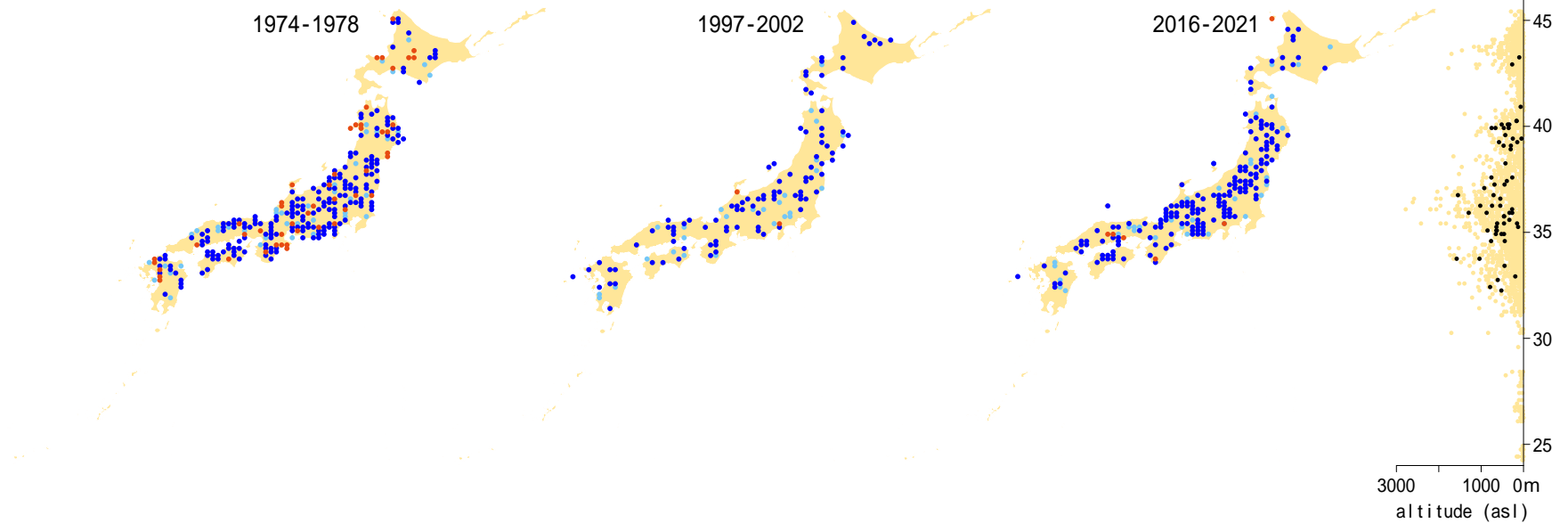
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	49	200	41
1997-2002	2	98	27
2016-2021	6	171	31

Recorded survey sites	
1997-2002	19
2016-2021	43



Altitudinal distribution
survey sites
recorded sites



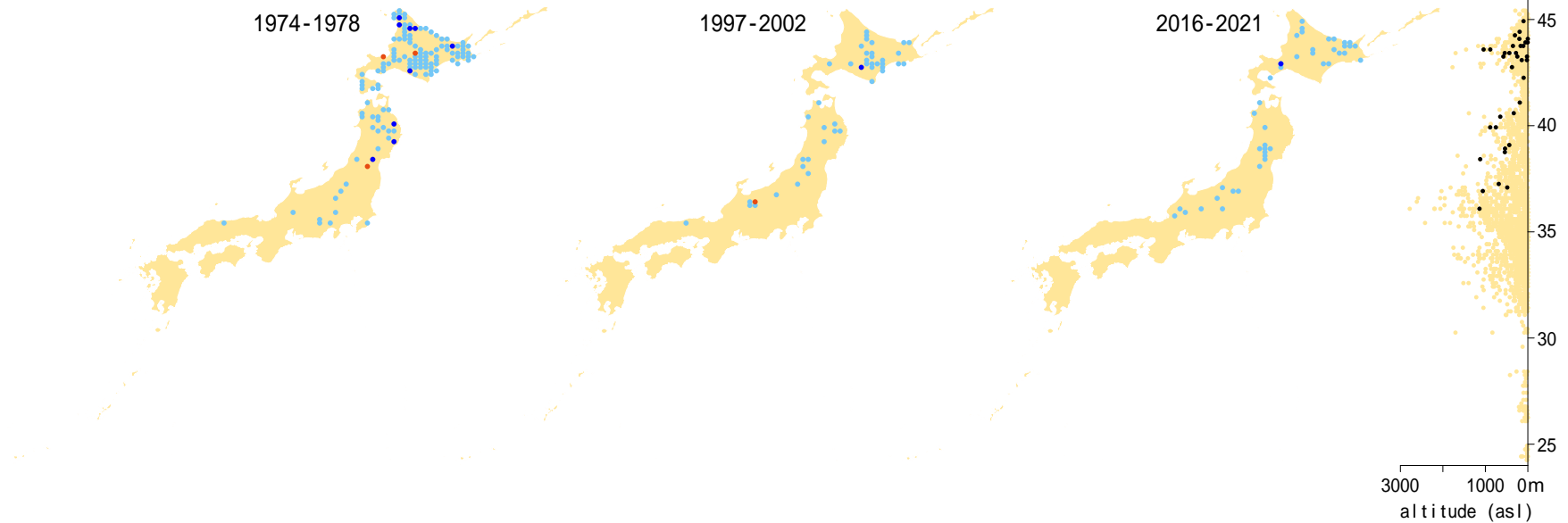
White-throated Needletail

Hirundapus caudacutus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	3	9	117
1997-2002	1	1	42
2016-2021	0	1	42

Recorded survey sites	
1997-2002	46
2016-2021	23

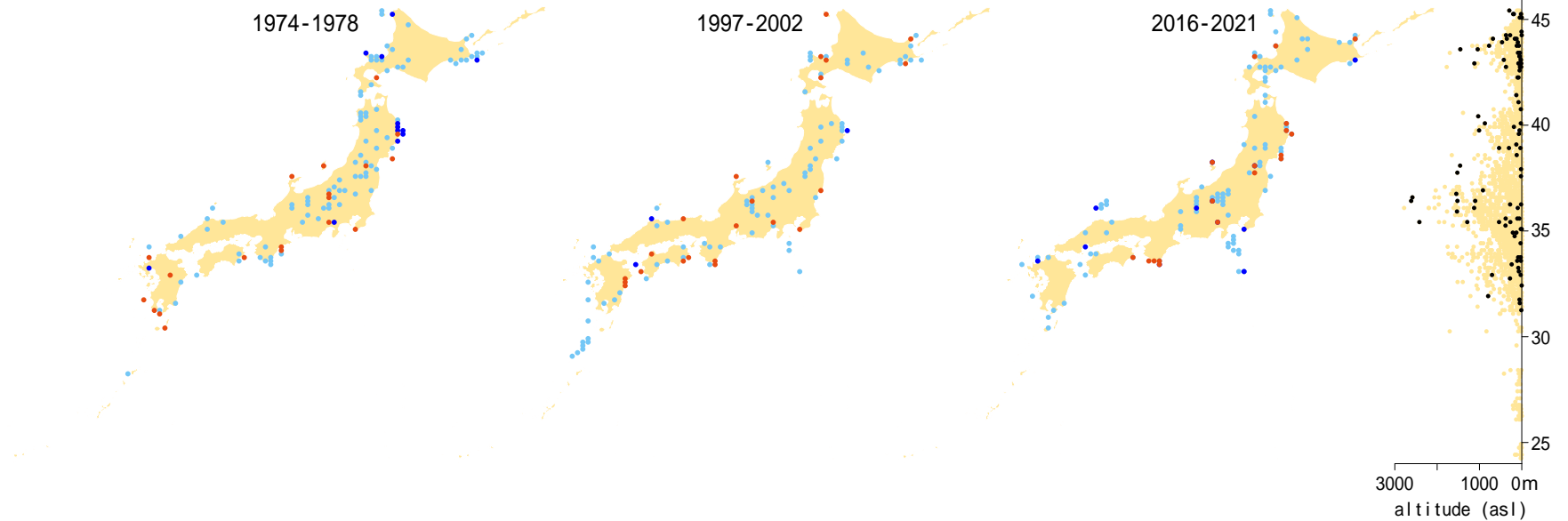


Pacific Swift
Apus pacificus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	19	12	89
1997-2002	22	3	81
2016-2021	18	7	85

Recorded survey sites	
1997-2002	145
2016-2021	84



Altitudinal distribution
survey sites
recorded sites

latitude

3000 1000 0m
altitude (asl)

House Swift

Apus nipalensis

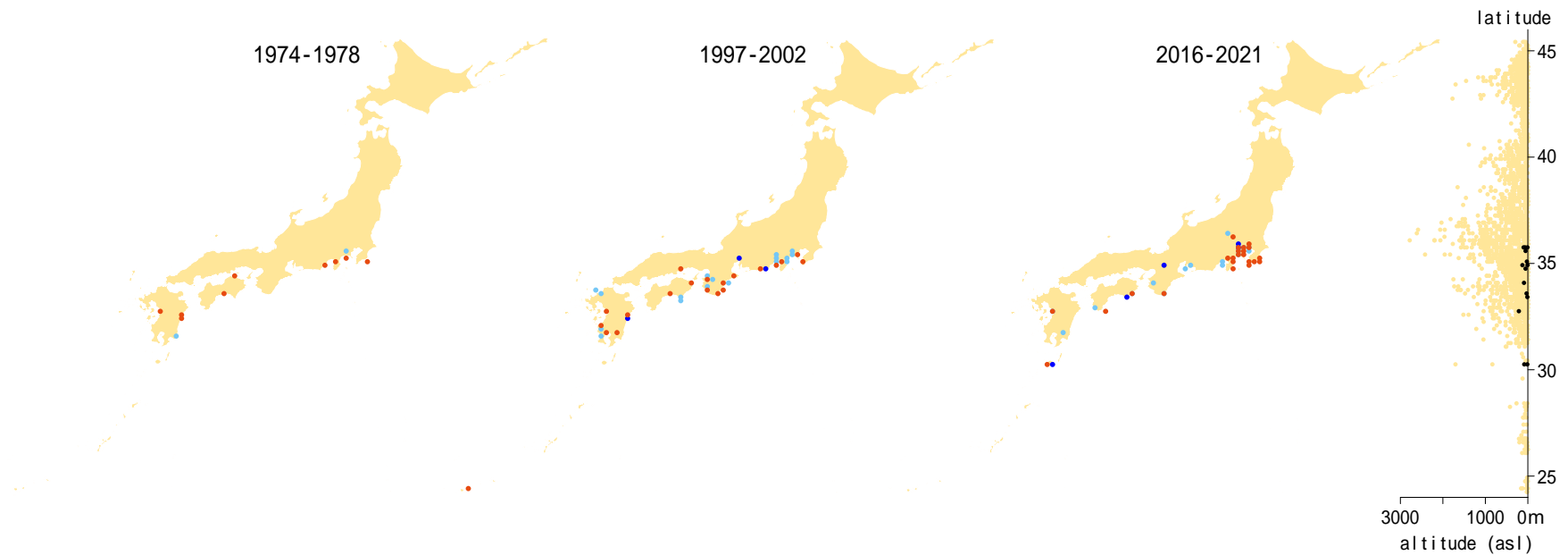
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	9	0	2
1997-2002	20	3	17
2016-2021	23	4	9

Recorded survey sites	
1997-2002	25
2016-2021	12



Altitudinal distribution
survey sites
recorded sites



Northern Lapwing

Vanellus vanellus

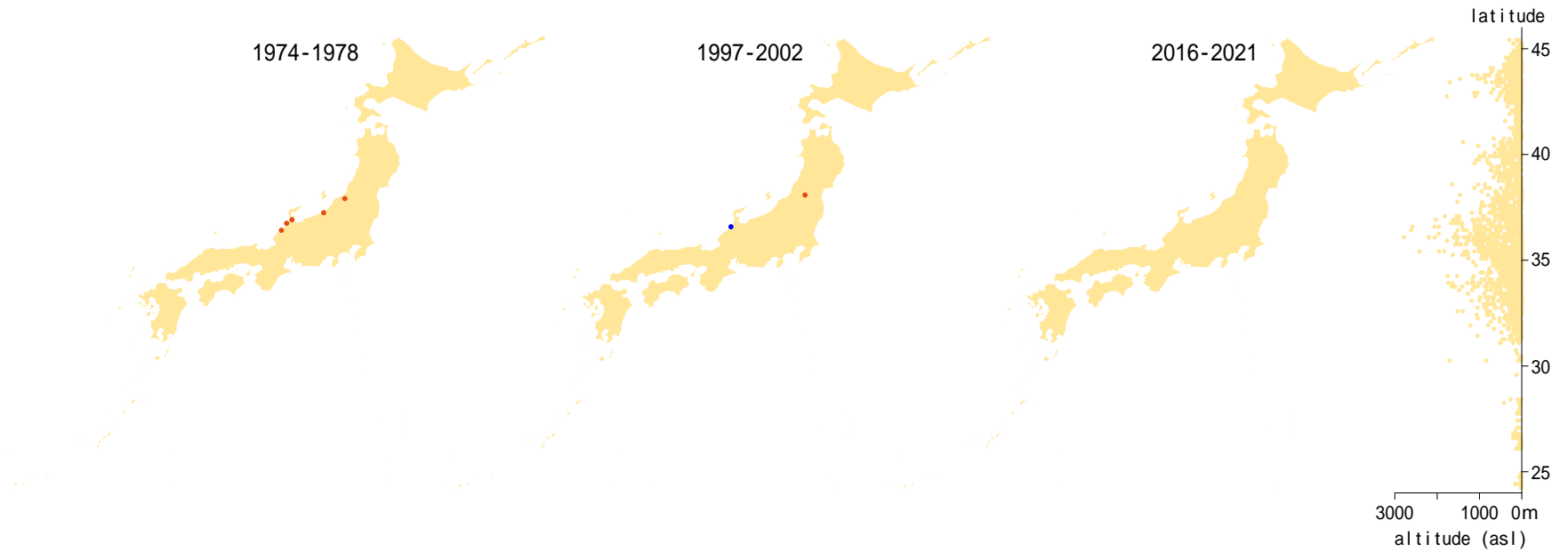
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	5	0	0
1997-2002	1	1	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	2
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Grey-headed Lapwing

Vanellus cinereus

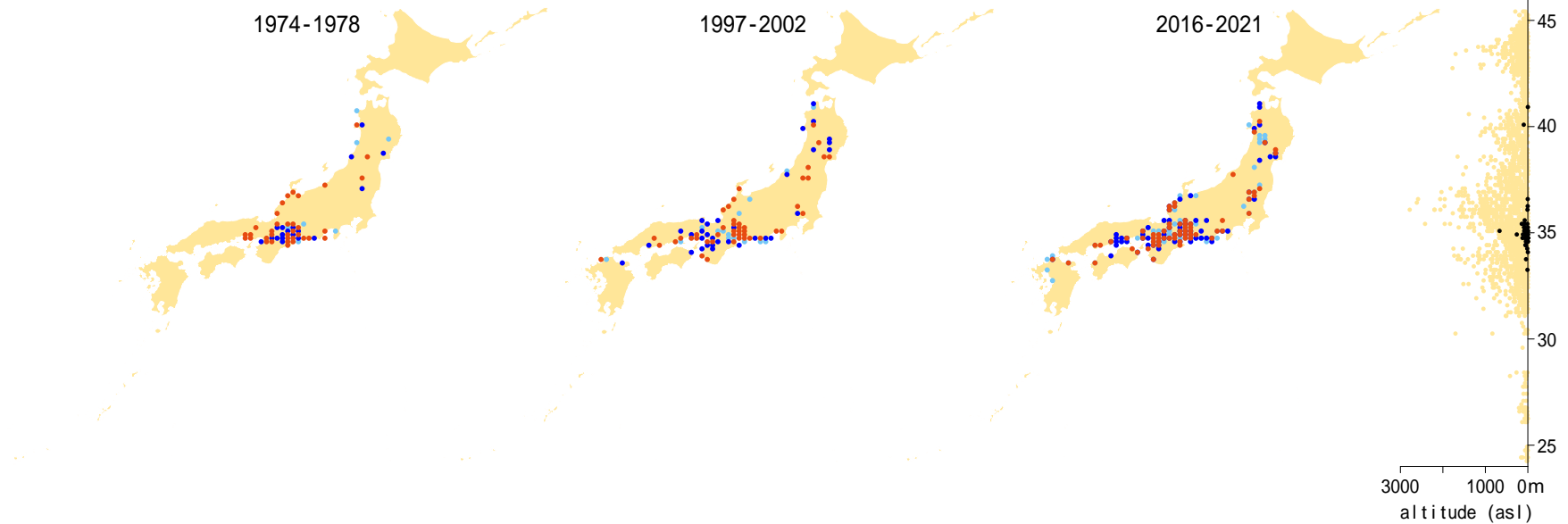
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	35	18	7
1997-2002	45	32	16
2016-2021	65	37	28

Recorded survey sites	
1997-2002	57
2016-2021	48



Altitudinal distribution
survey sites
recorded sites



Long-billed Plover

Charadrius placidus

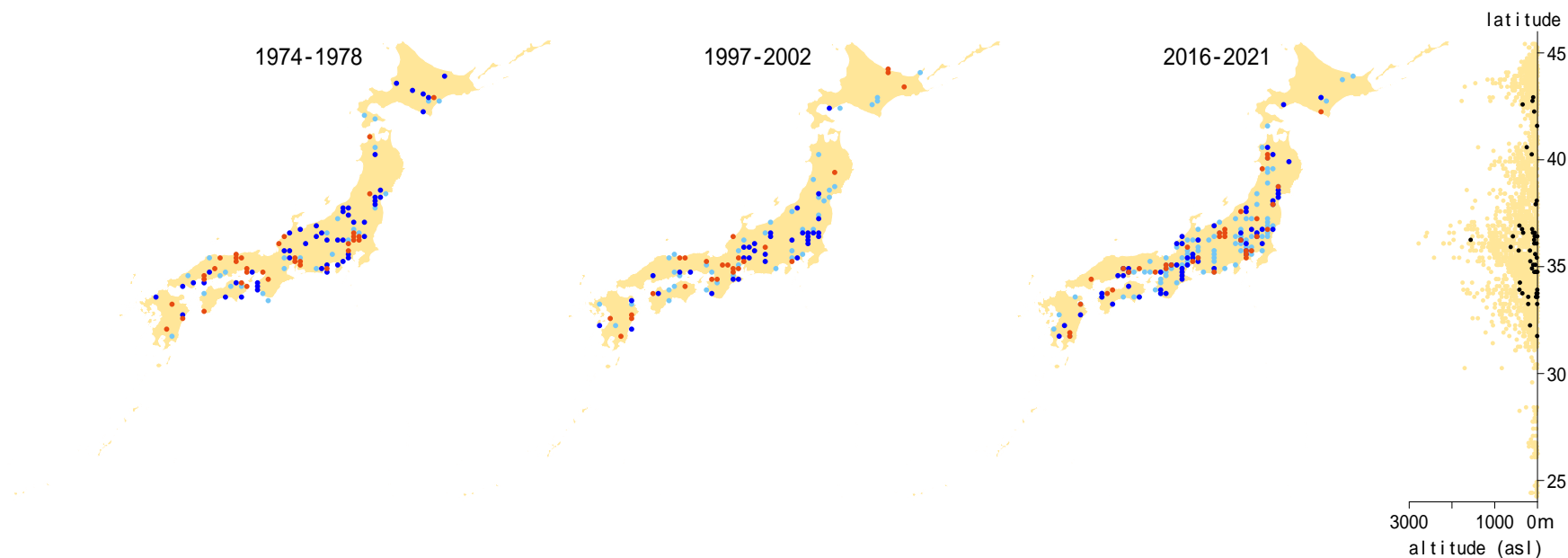
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	35	51	27
1997-2002	25	34	40
2016-2021	37	49	72

Recorded survey sites	
1997-2002	39
2016-2021	43



Altitudinal distribution
survey sites
recorded sites



Little Ringed Plover

Charadrius dubius

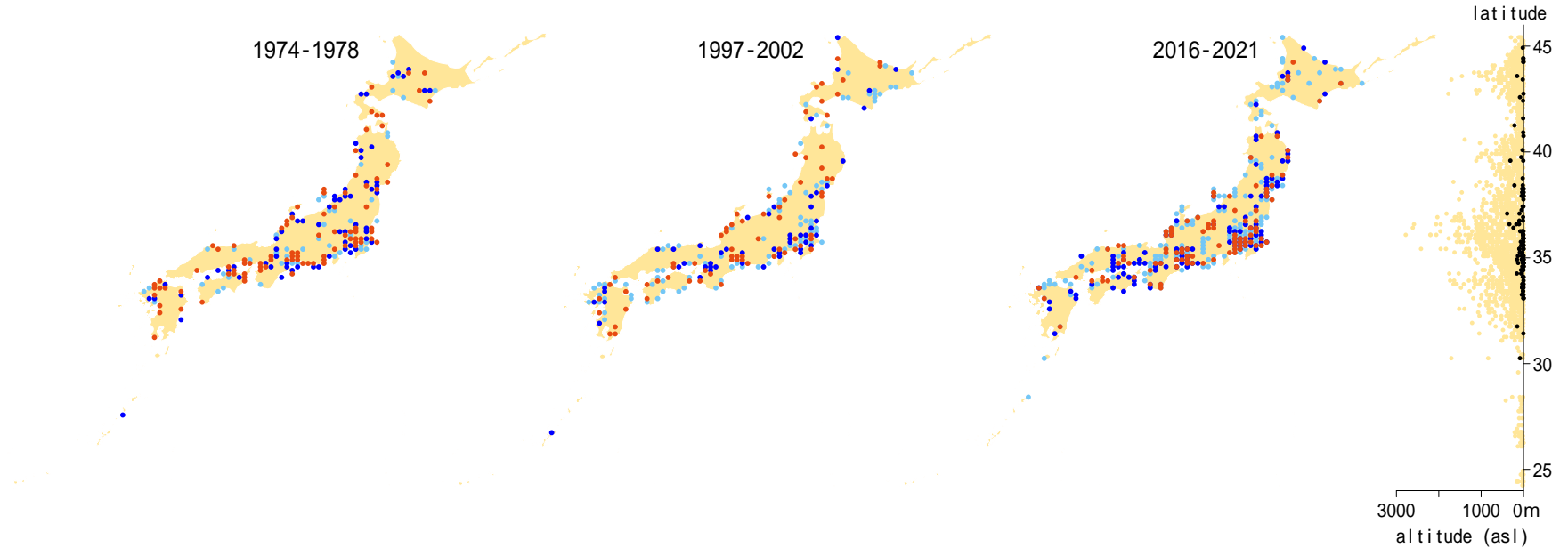
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	92	65	45
1997-2002	69	51	86
2016-2021	101	79	122

Recorded survey sites	
1997-2002	123
2016-2021	111



Altitudinal distribution
survey sites
recorded sites



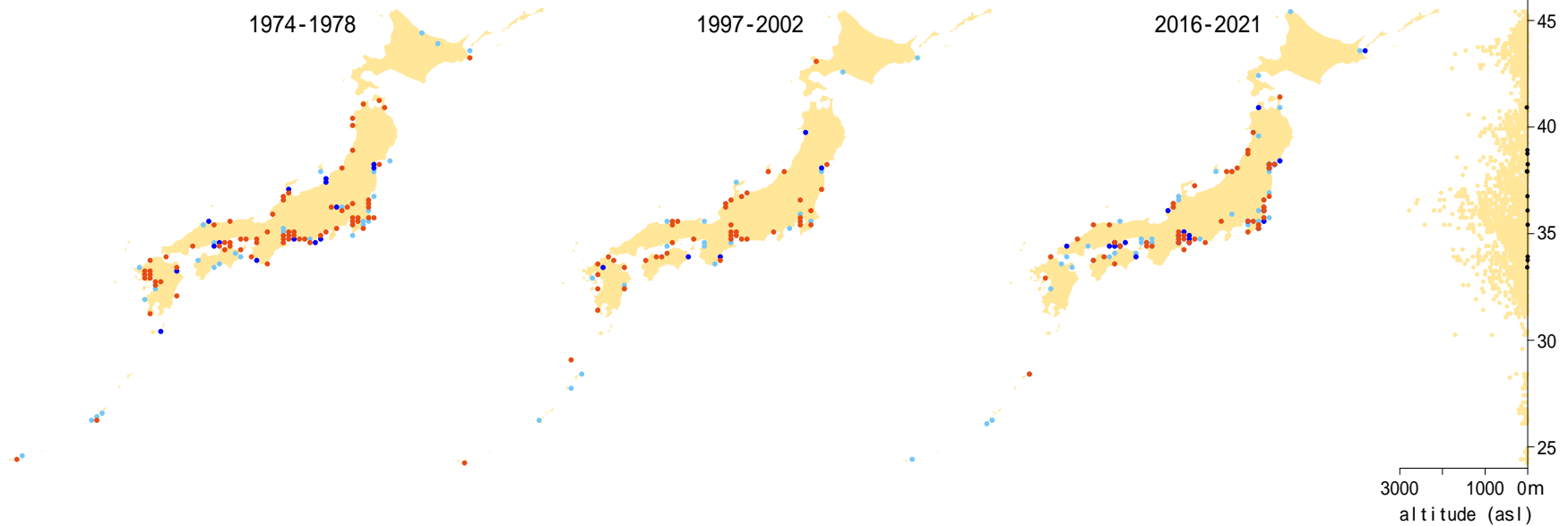
Kentish Plover

Charadrius alexandrinus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	74	15	30
1997-2002	46	5	19
2016-2021	48	13	32

Recorded survey sites	
1997-2002	22
2016-2021	9



Black-winged Stilt

Himantopus himantopus

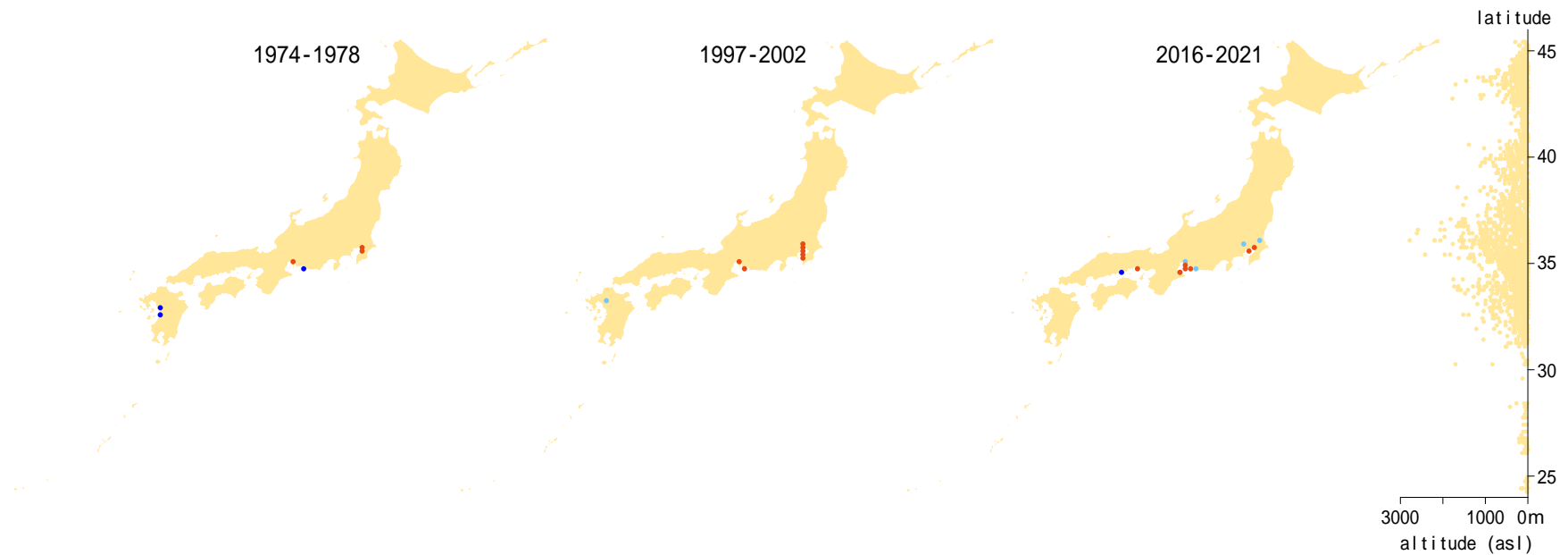
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	3	3	0
1997-2002	7	0	1
2016-2021	7	1	4

Recorded survey sites	
1997-2002	2
2016-2021	5



Altitudinal distribution
survey sites
recorded sites



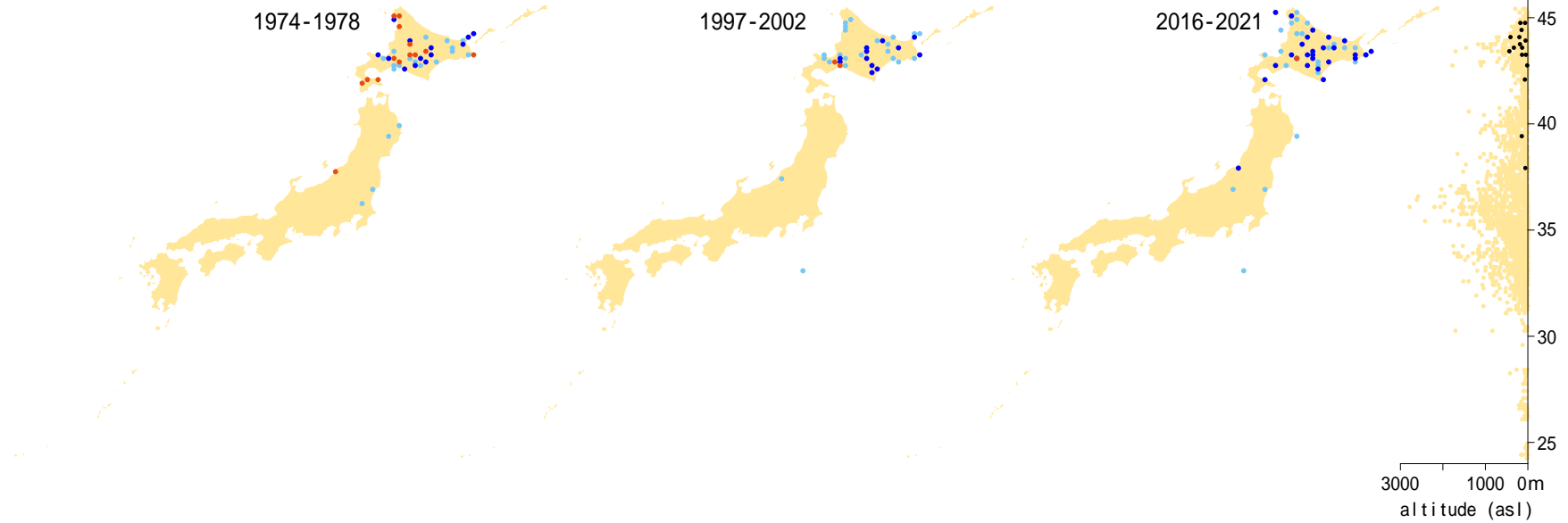
Eurasian Woodcock

Scolopax rusticola

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	14	13	19
1997-2002	2	12	22
2016-2021	1	25	22

Recorded survey sites	
1997-2002	14
2016-2021	13



Amami Woodcock

Scolopax mira

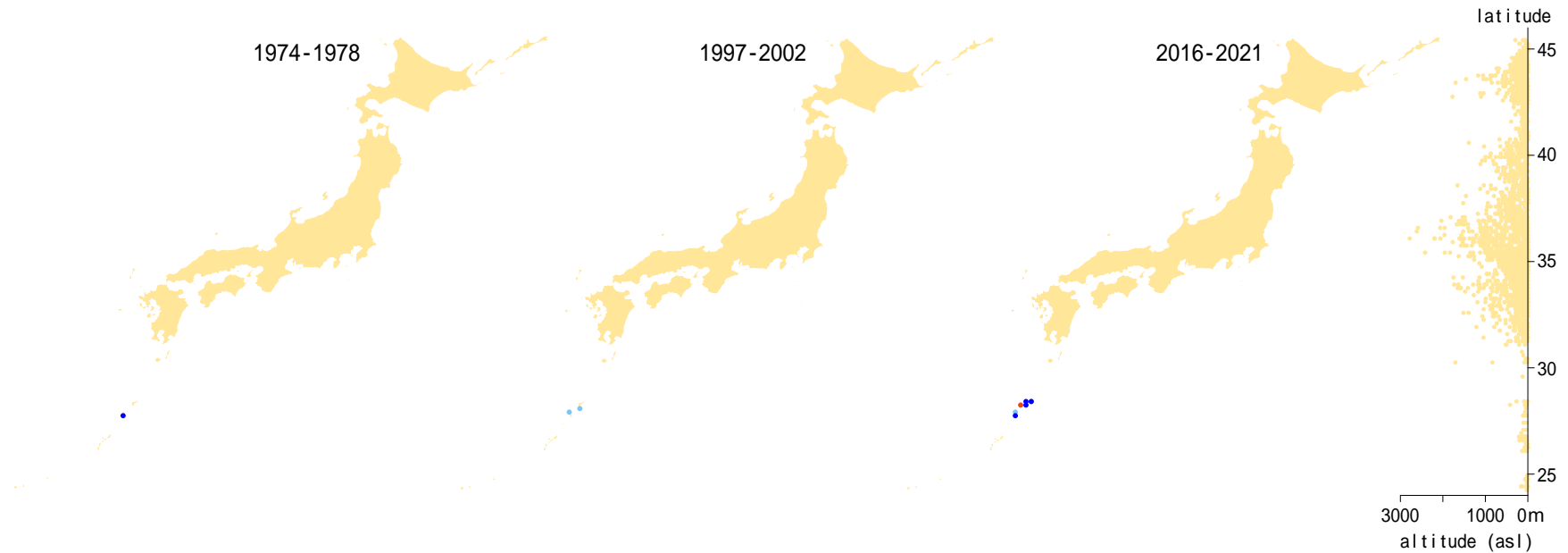
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	1	0
1997-2002	0	0	2
2016-2021	1	4	1

Recorded survey sites	
1997-2002	1
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



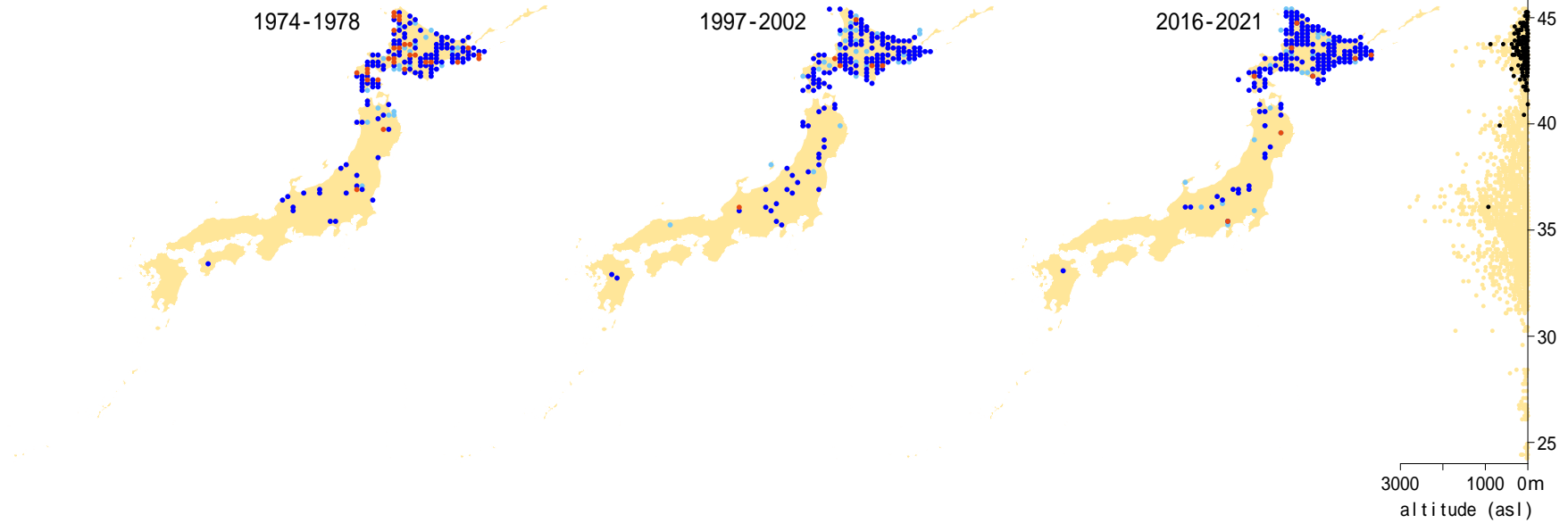
Latham's Snipe

Gallinago hardwickii

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	28	128	22
1997-2002	6	146	28
2016-2021	8	161	21

Recorded survey sites	
1997-2002	155
2016-2021	137



Common Redshank

Tringa totanus

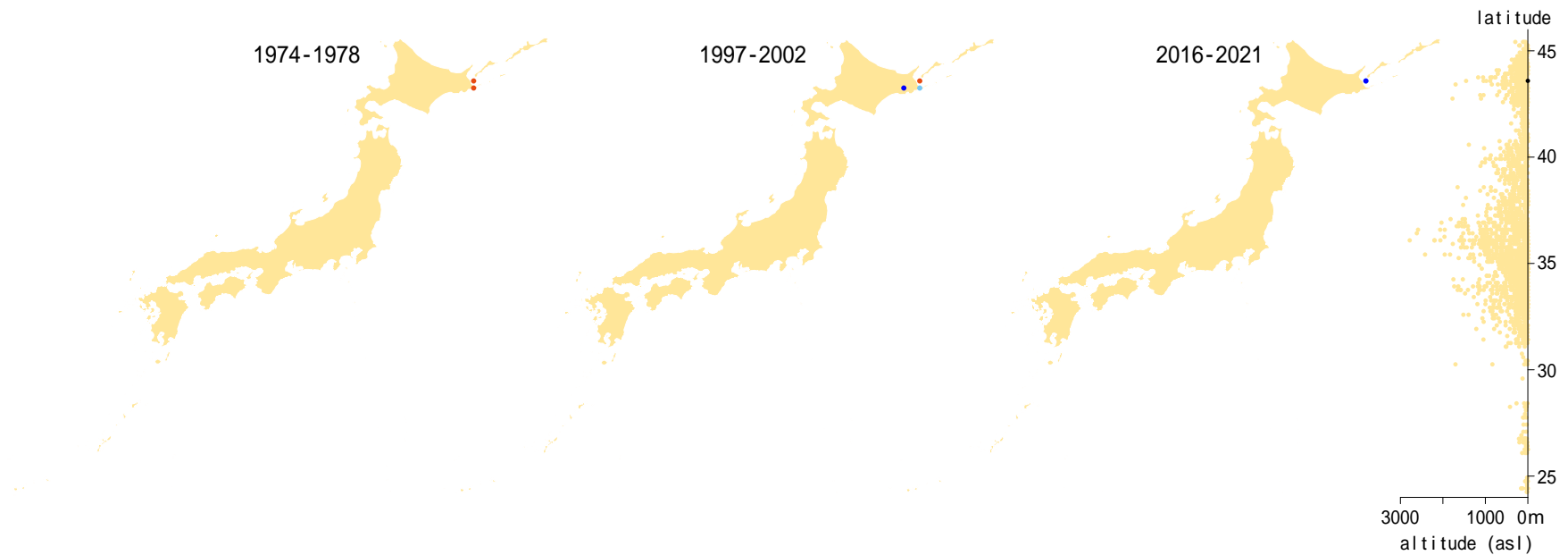
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	0	0
1997-2002	1	1	1
2016-2021	0	1	0

Recorded survey sites	
1997-2002	3
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



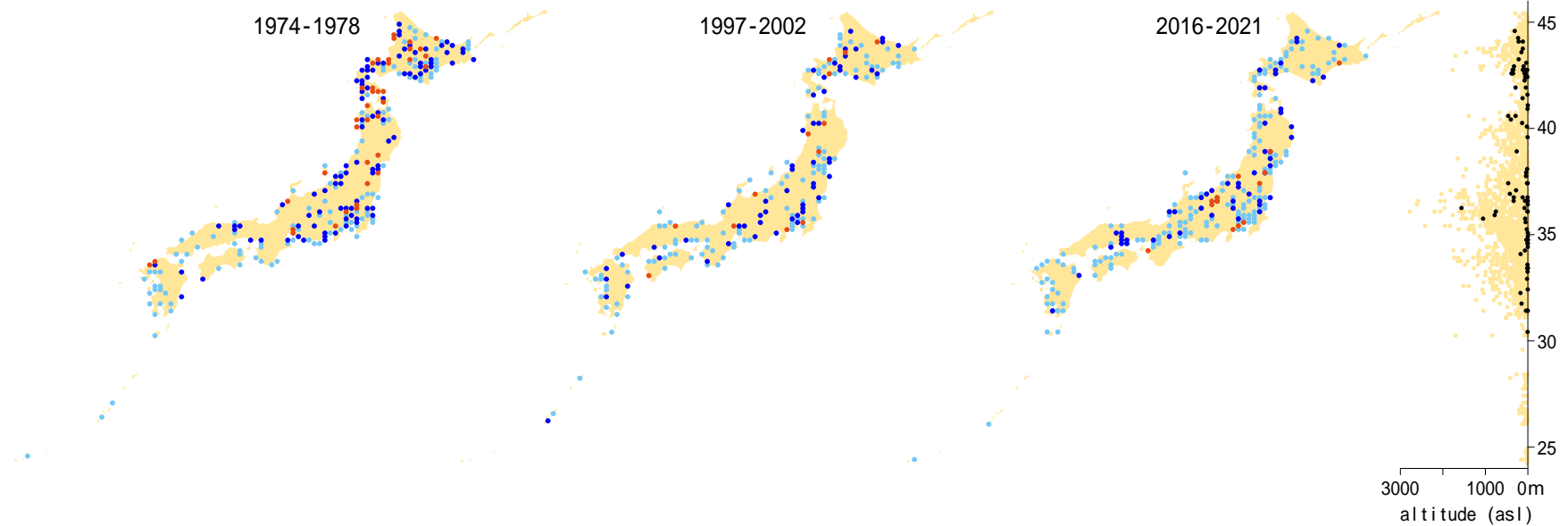
Common Sandpiper

Actitis hypoleucos

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	38	95	113
1997-2002	13	56	115
2016-2021	13	51	164

Recorded survey sites	
1997-2002	117
2016-2021	75



Greater Painted-snipe

Rostratula benghalensis

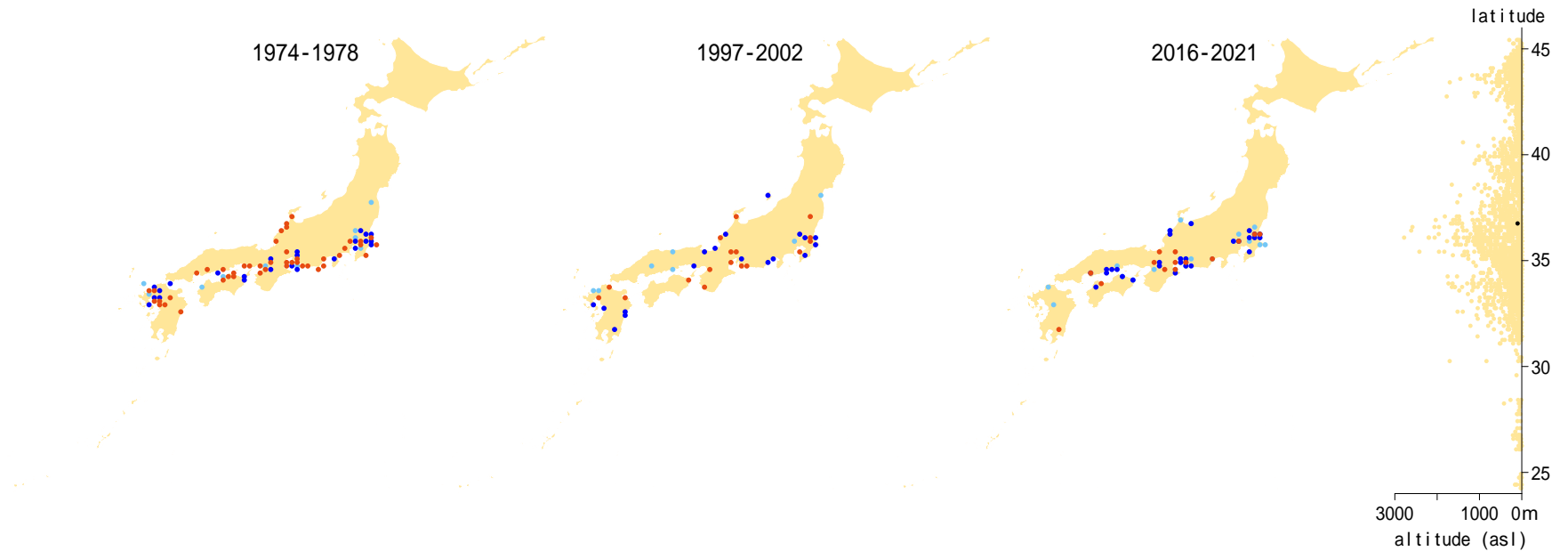
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	45	24	10
1997-2002	17	18	7
2016-2021	14	24	11

Recorded survey sites	
1997-2002	1
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



Barred Buttonquail

Turnix suscitator

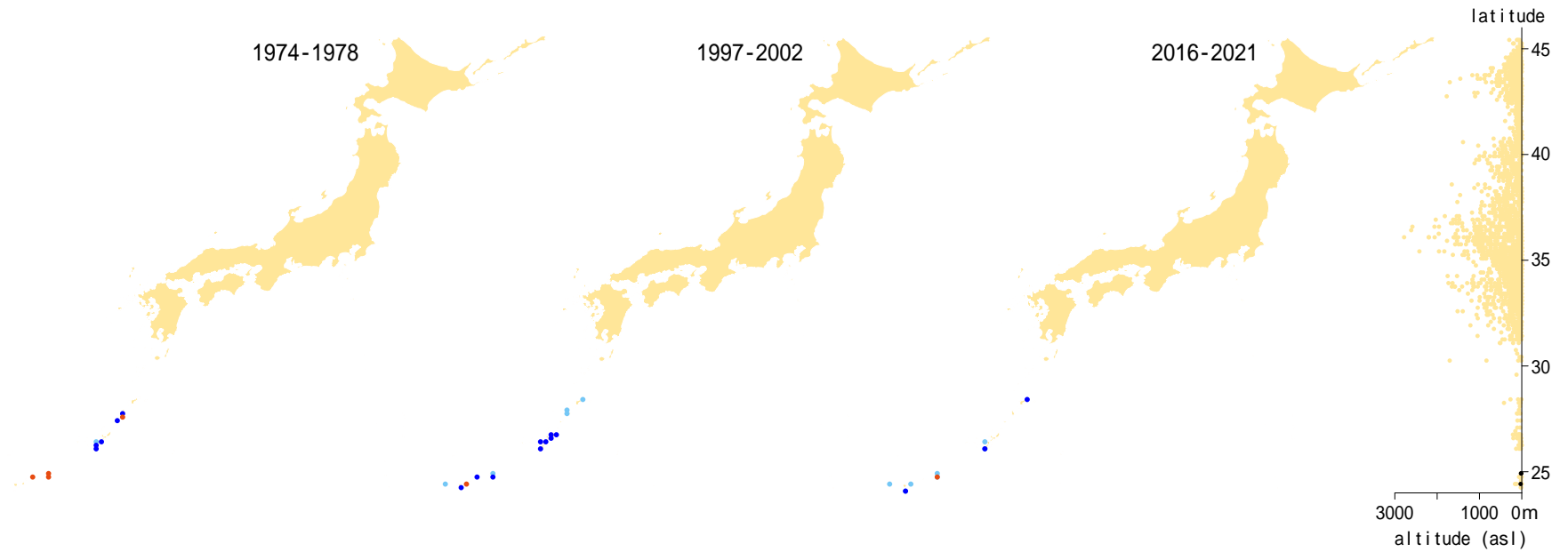
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	4	5	1
1997-2002	1	9	5
2016-2021	1	3	4

Recorded survey sites	
1997-2002	12
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



Oriental Pratincole

Glareola maldivarum

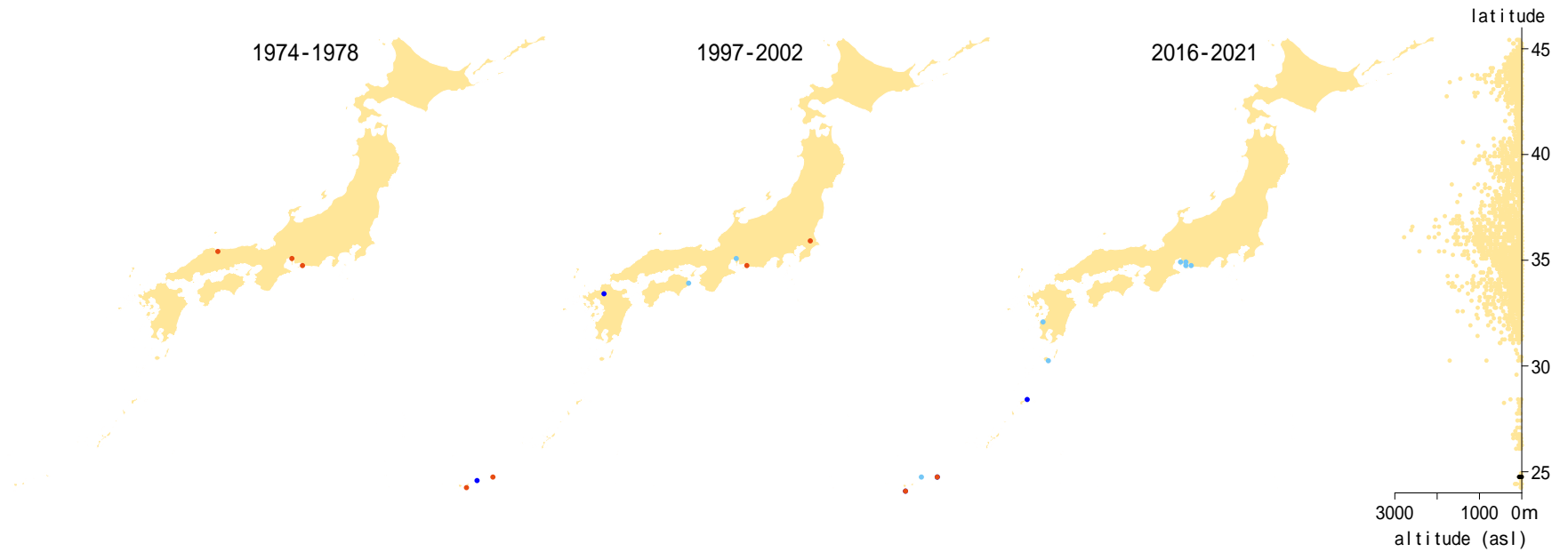
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	3	0	0
1997-2002	4	2	2
2016-2021	2	1	7

Recorded survey sites	
1997-2002	2
2016-2021	4



Altitudinal distribution
survey sites
recorded sites



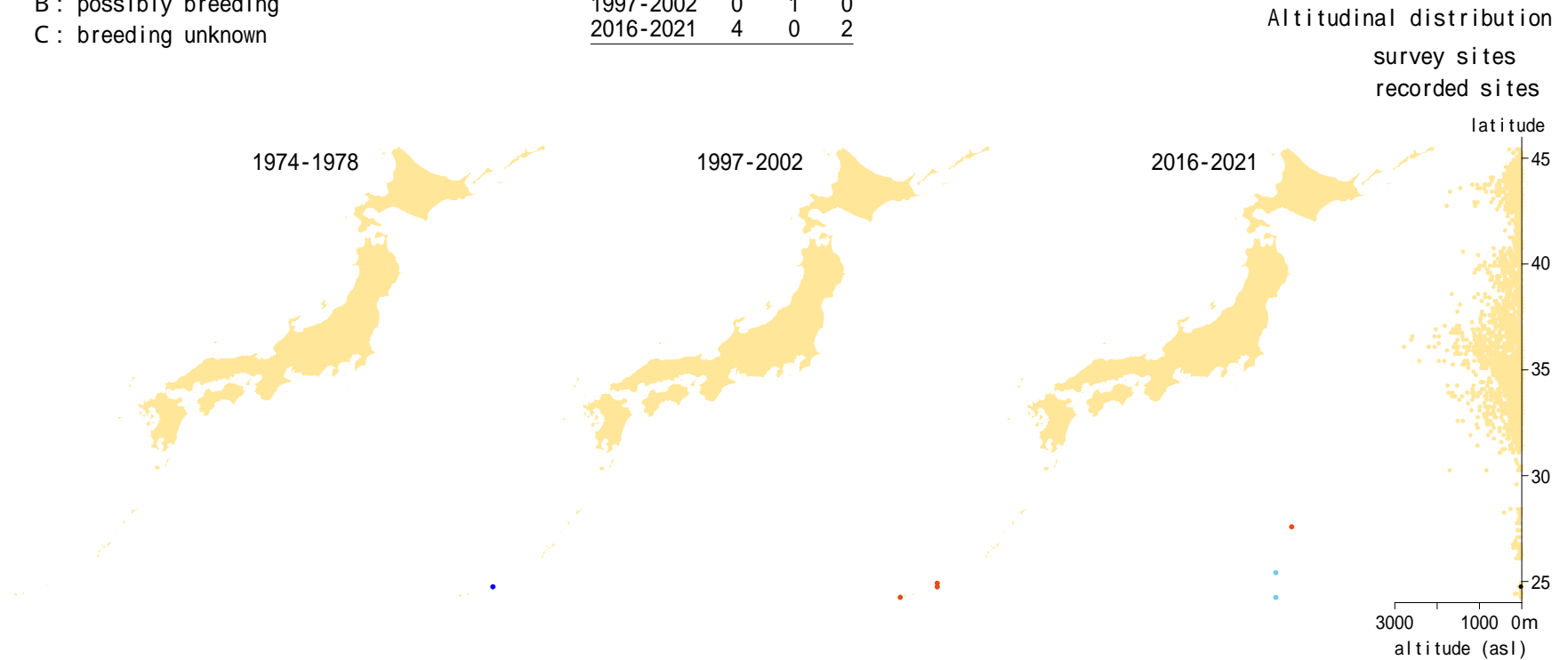
Brown Noddy

Anous stolidus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	0	1	0
2016-2021	4	0	2

Recorded survey sites	
1997-2002	1
2016-2021	1



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Black Noddy

Anous minutus

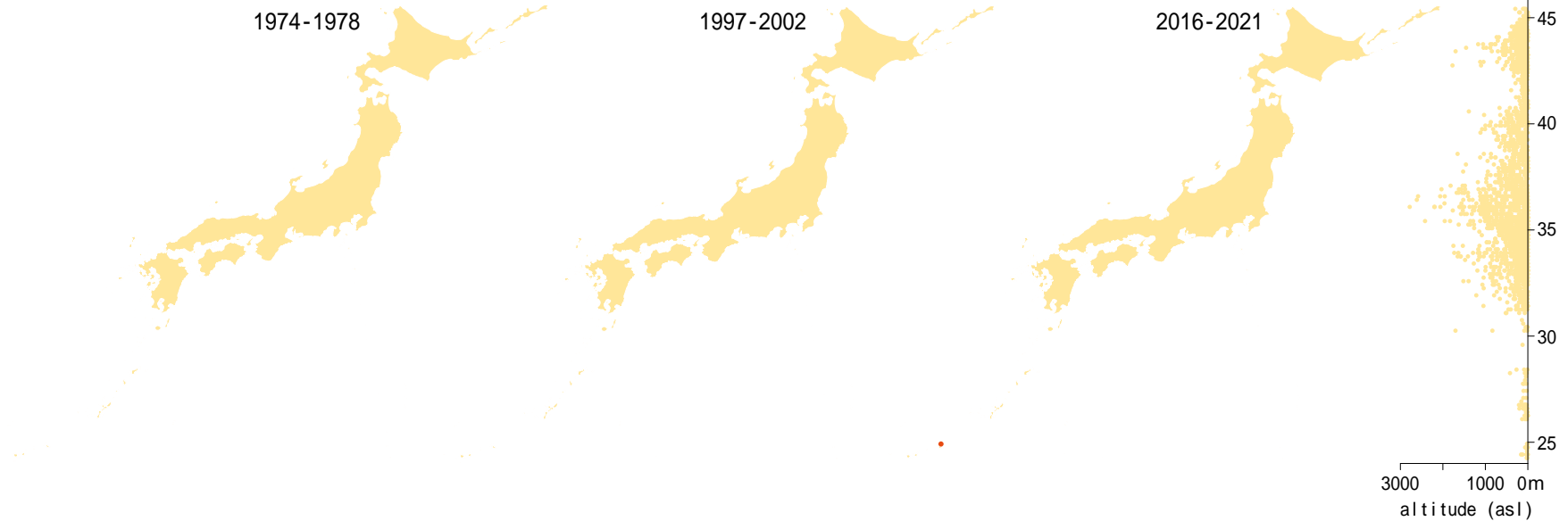
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Black-tailed Gull

Larus crassirostris

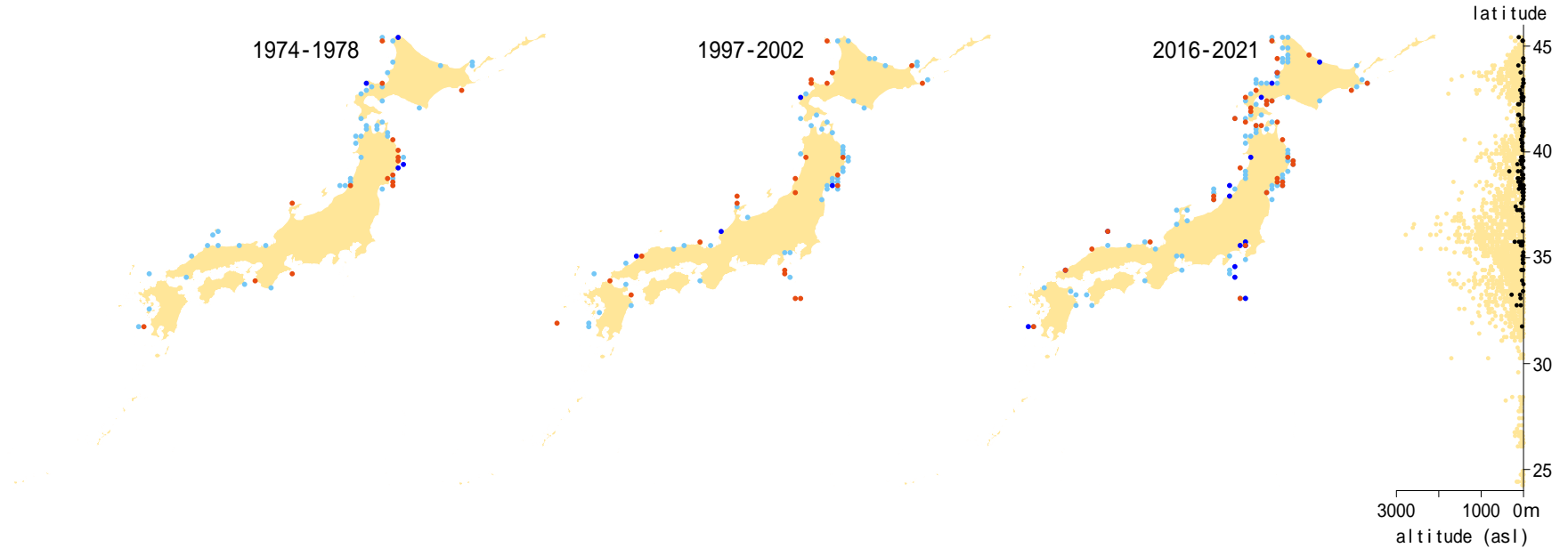
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	16	4	45
1997-2002	24	4	49
2016-2021	37	12	72

Recorded survey sites	
1997-2002	109
2016-2021	90



Altitudinal distribution
survey sites
recorded sites



Slaty-backed Gull

Larus schistisagus

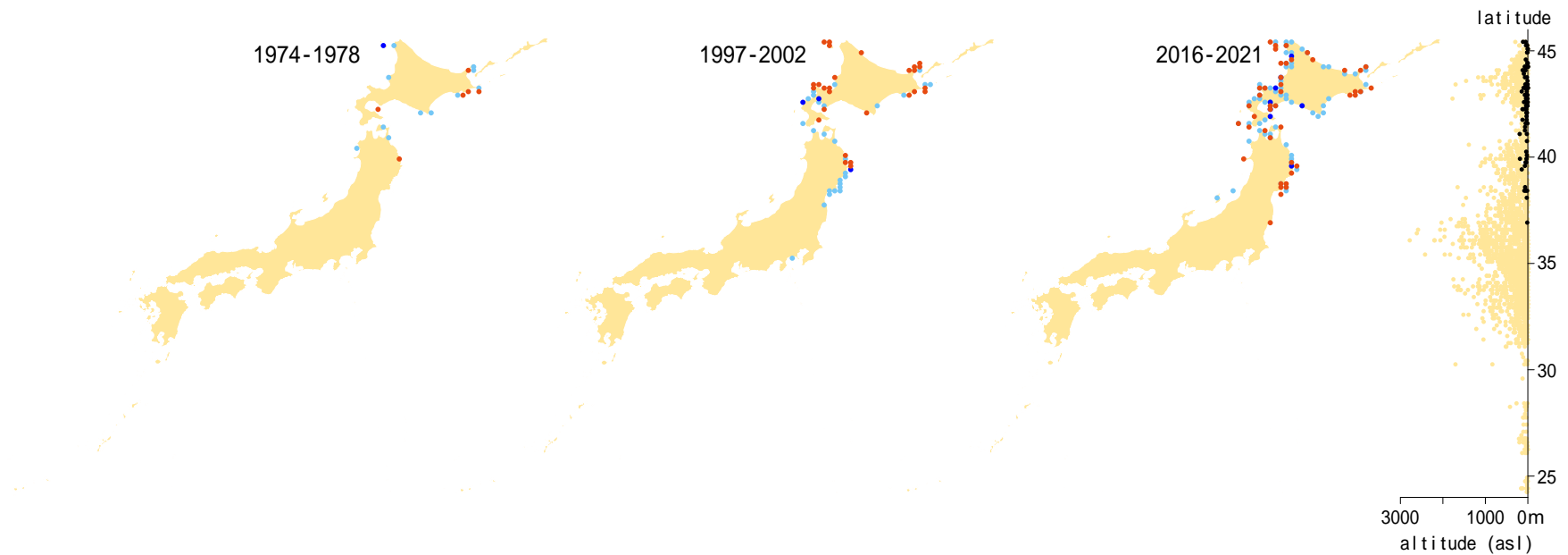
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	6	1	11
1997-2002	27	3	27
2016-2021	43	6	48

Recorded survey sites	
1997-2002	68
2016-2021	70



Altitudinal distribution
survey sites
recorded sites



Greater Crested Tern

Sterna bergii

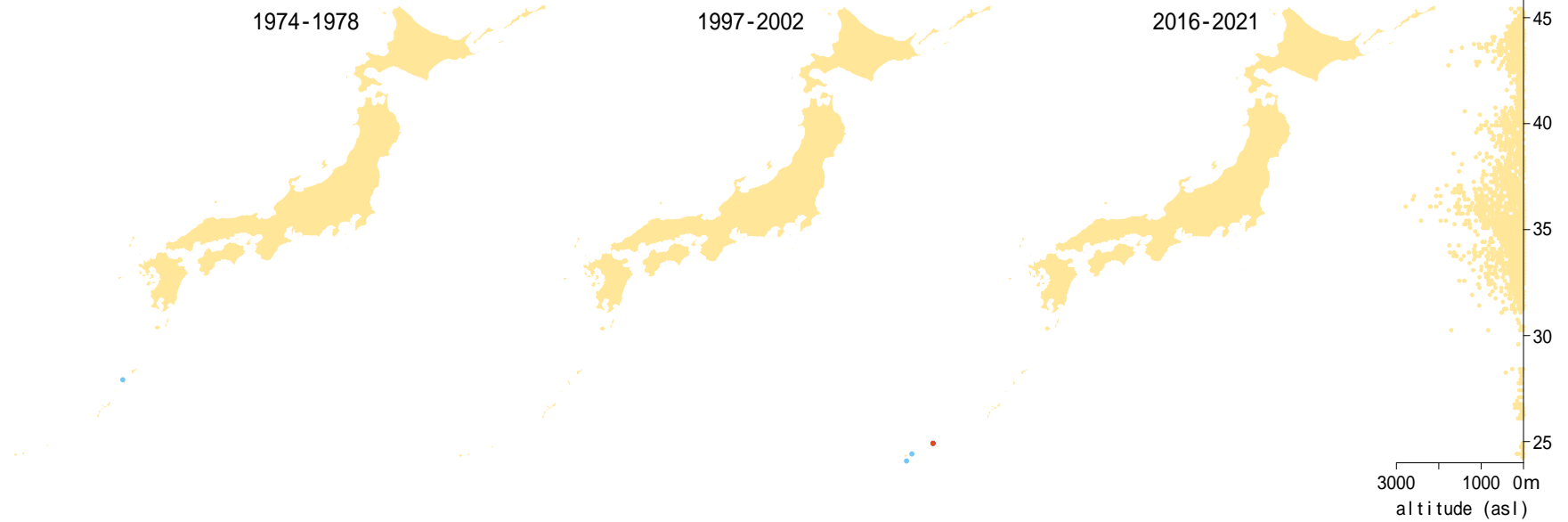
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	0	0	1
1997-2002	0	0	0
2016-2021	1	0	2

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Little Tern

Sterna albifrons

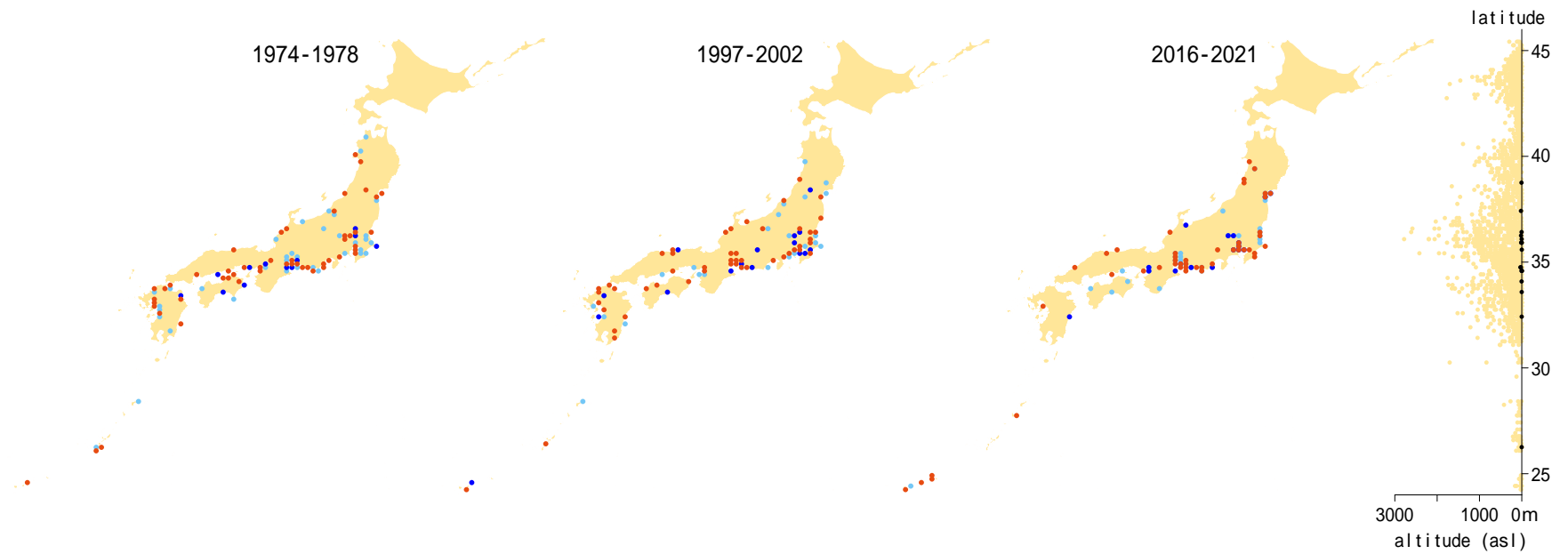
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	51	12	36
1997-2002	50	16	23
2016-2021	46	9	15

Recorded survey sites	
1997-2002	59
2016-2021	15



Altitudinal distribution
survey sites
recorded sites



Bridled Tern

Sterna anaethetus

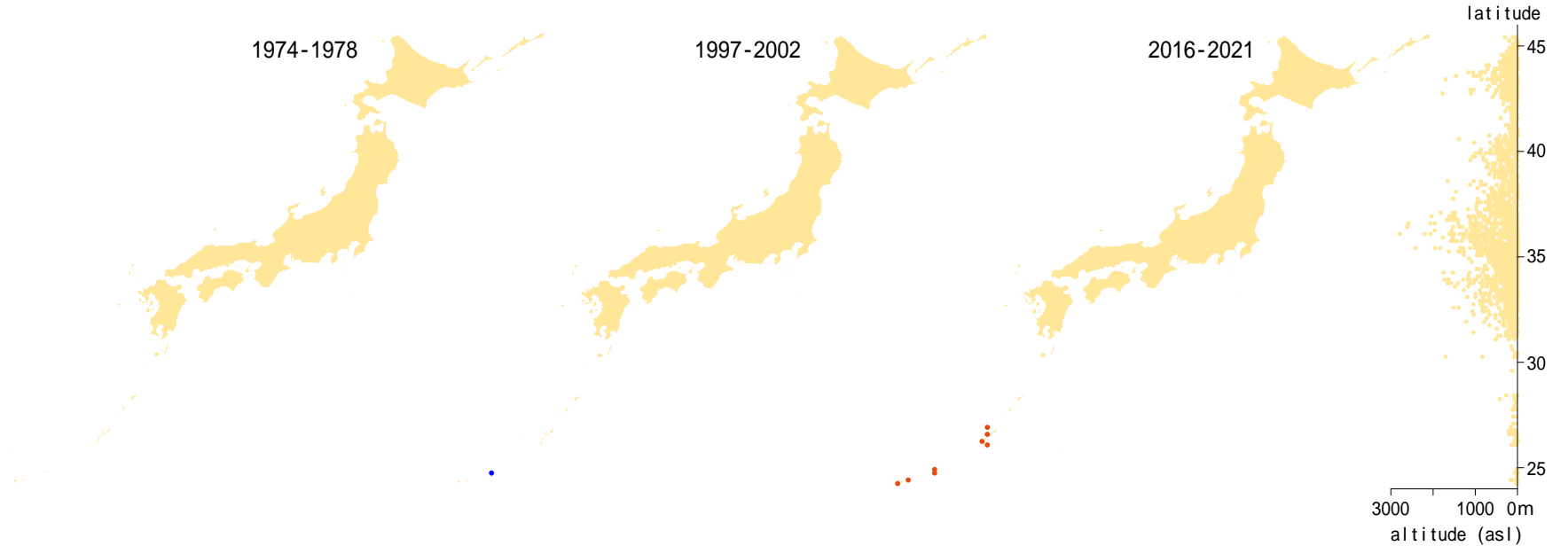
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	
	A B C
1974-1978	0 0 0
1997-2002	0 1 0
2016-2021	8 0 0

Recorded survey sites	
1997-2002	1
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Sooty Tern

Sterna fuscata

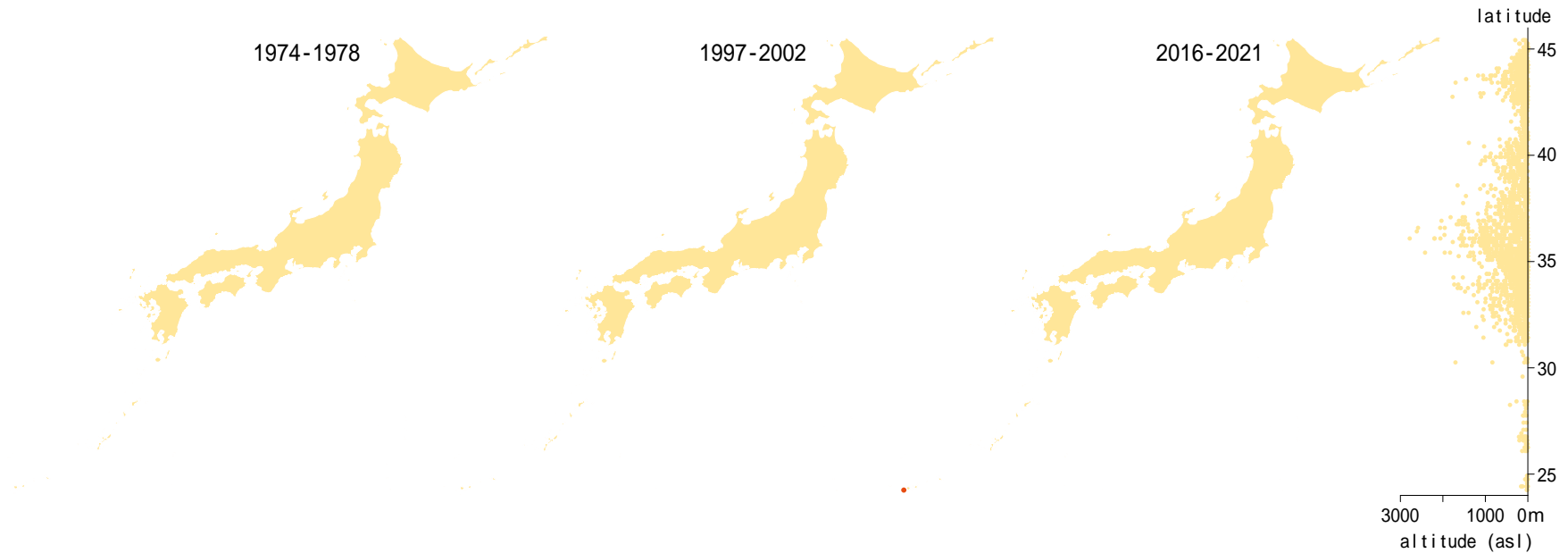
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Roseate Tern

Sterna dougallii

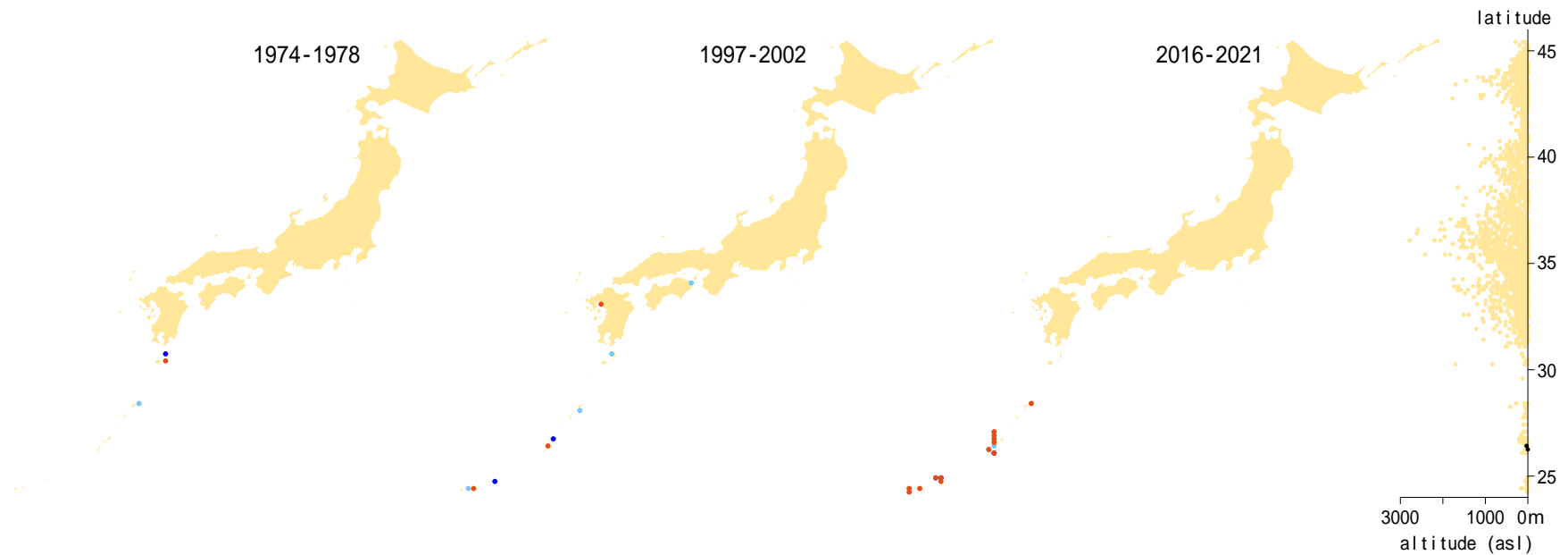
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	1	1
1997-2002	3	3	4
2016-2021	13	0	1

Recorded survey sites	
1997-2002	1
2016-2021	2



Altitudinal distribution
survey sites
recorded sites



Black-naped Tern

Sterna sumatrana

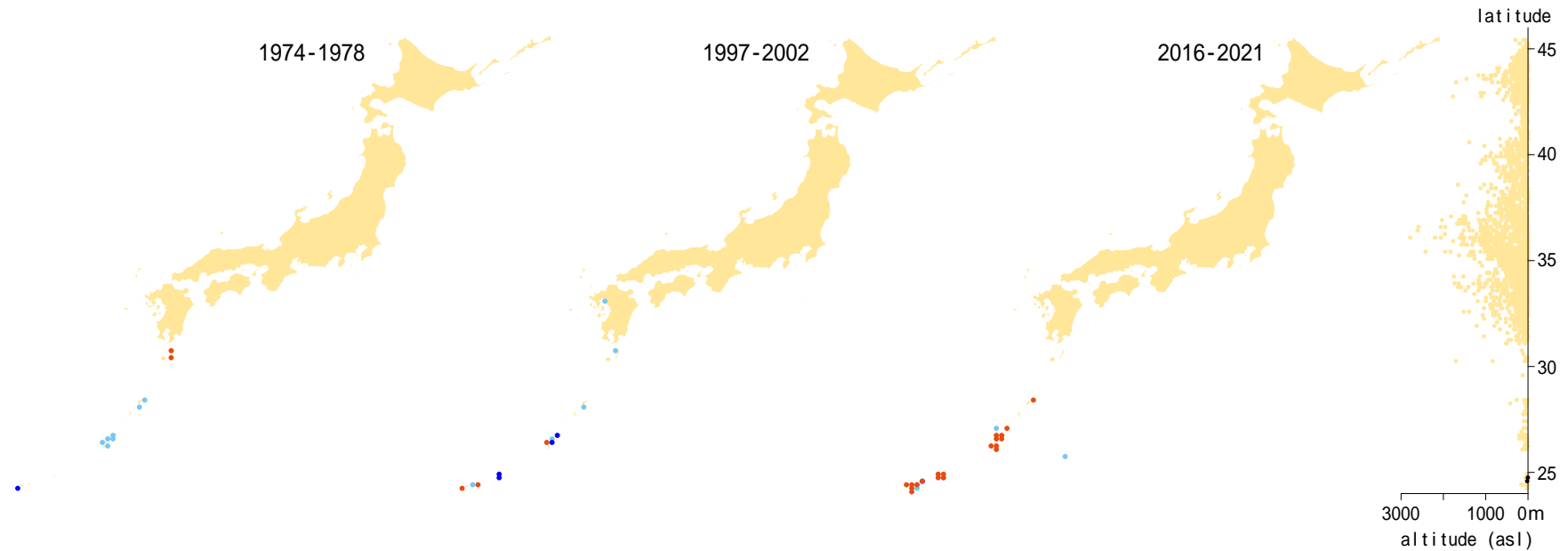
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	
	A B C
1974-1978	2 1 7
1997-2002	3 4 5
2016-2021	19 0 3

Recorded survey sites	
1997-2002	5
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Common Tern

Sterna hirundo

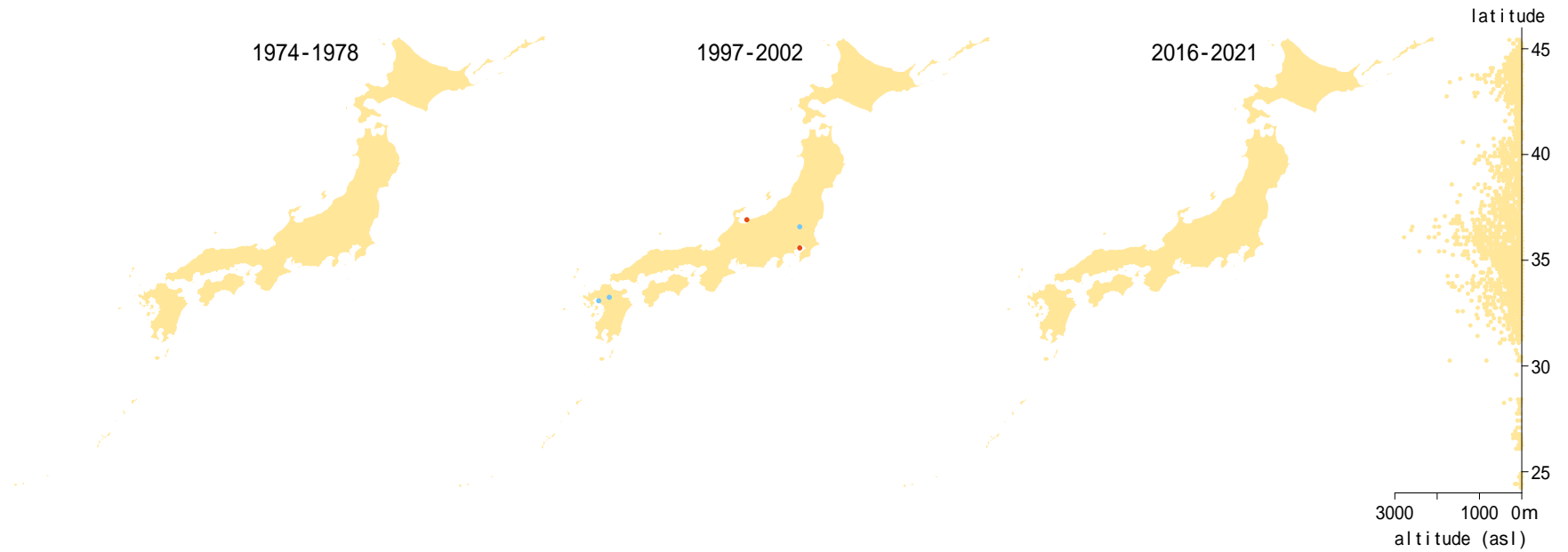
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	2	0	3
2016-2021	0	0	0

Recorded survey sites	
1997-2002	3
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Common Murre

Uria aalge

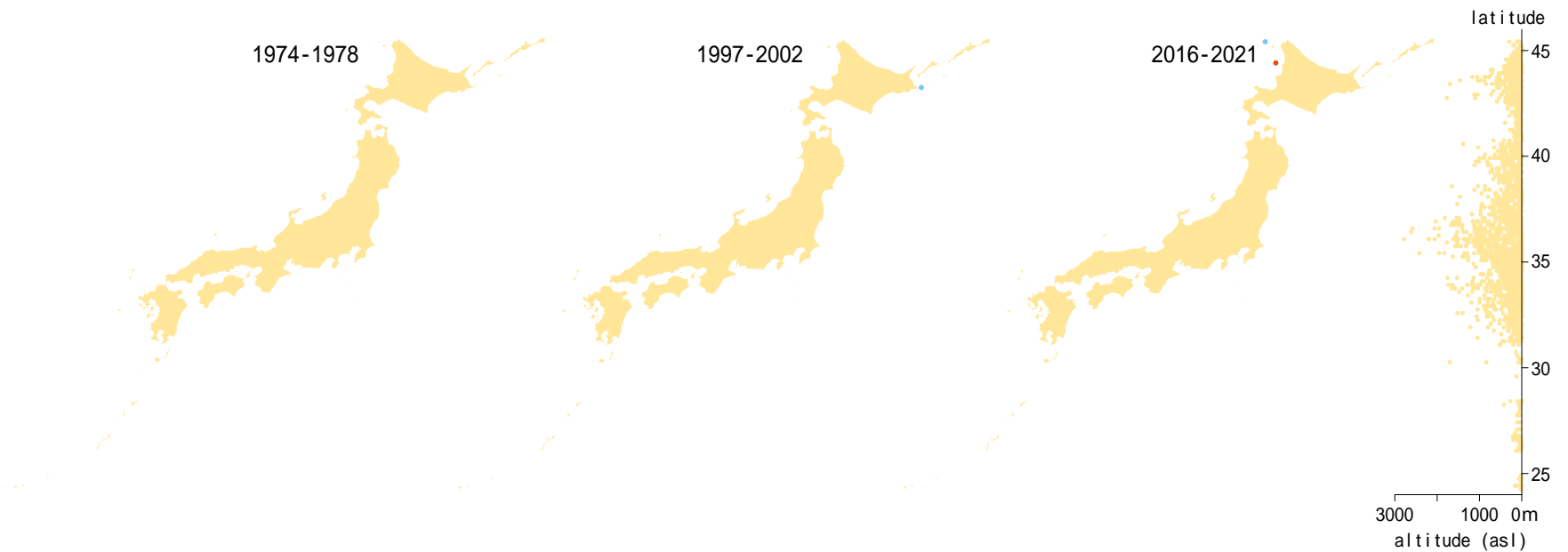
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	1
2016-2021	1	0	1

Recorded survey sites	
1997-2002	1
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



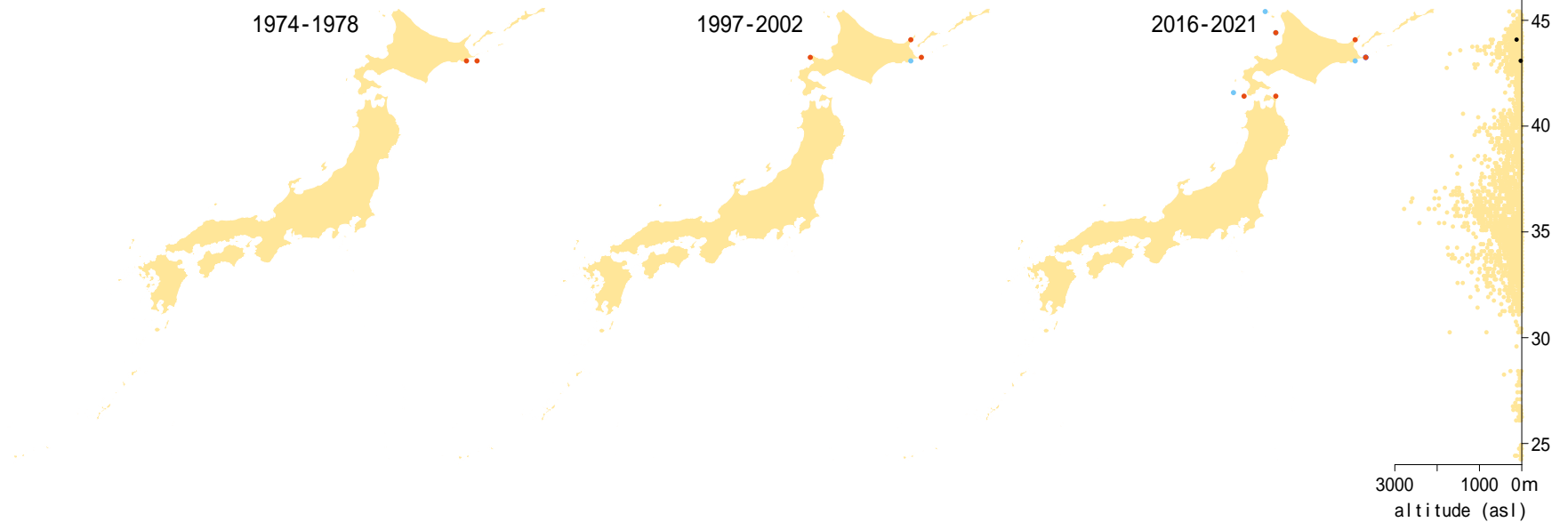
Spectacled Guillemot

Cepphus carbo

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	0	0
1997-2002	3	0	1
2016-2021	5	0	3

Recorded survey sites	
1997-2002	1
2016-2021	2



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

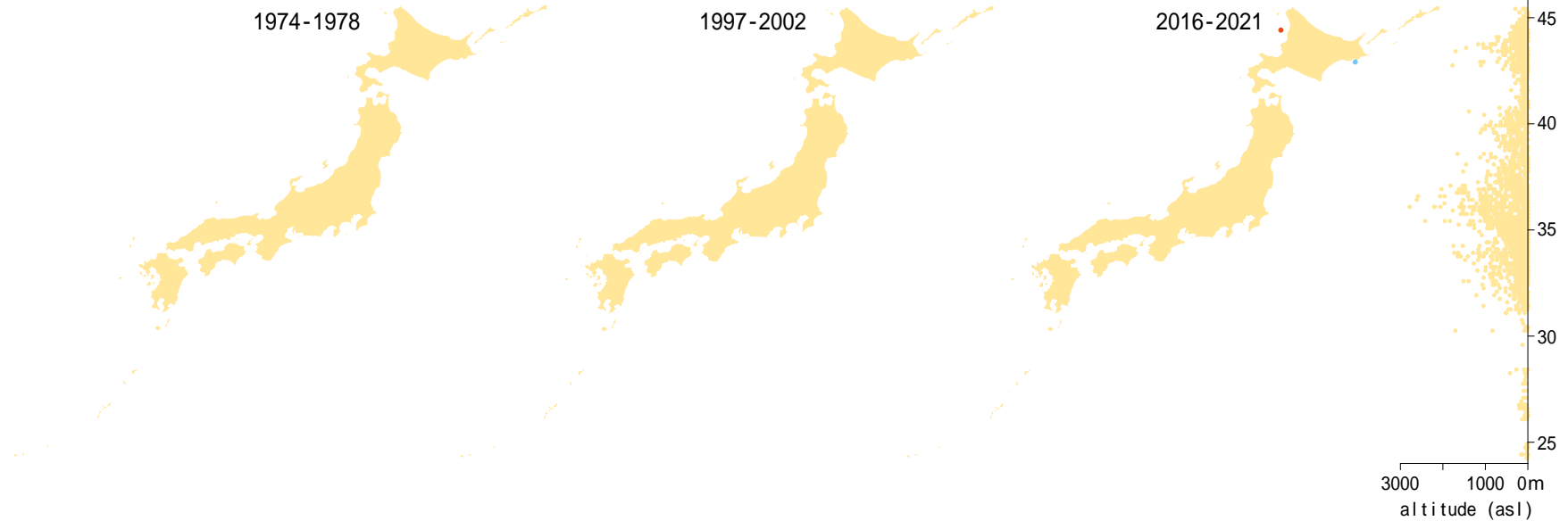
Ancient Murrelet

Synthliboramphus antiquus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	0	1

Recorded survey sites	
1997-2002	0
2016-2021	1



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Japanese Murrelet

Synthliboramphus wumizusume

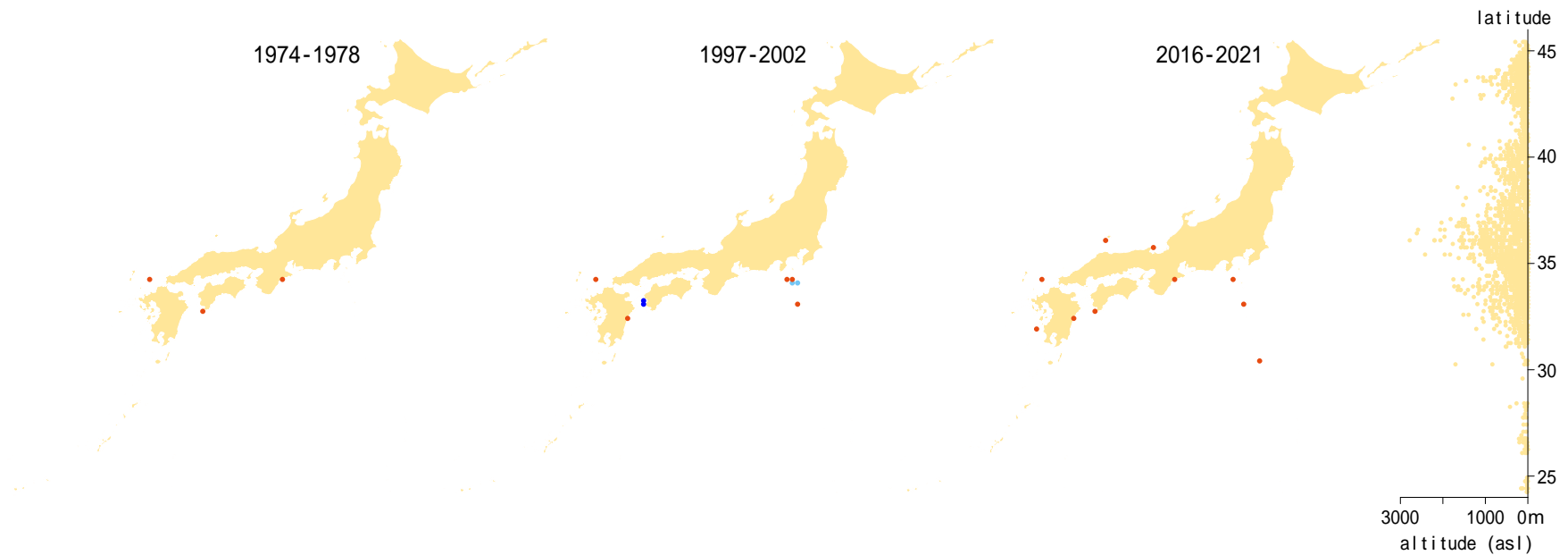
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	3	0	0
1997-2002	5	2	2
2016-2021	10	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Rhinoceros Auklet

Cerorhinca monocerata

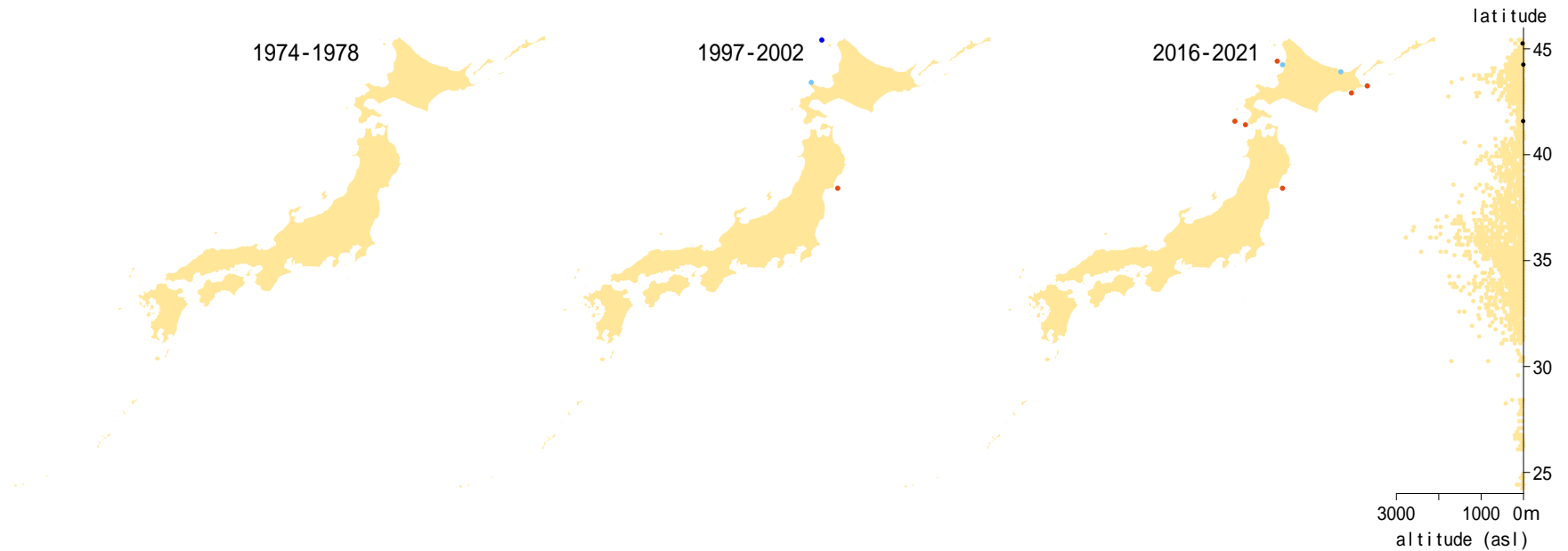
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	1	1	1
2016-2021	6	1	2

Recorded survey sites	
1997-2002	3
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



Note: seabird surveys and seabird cruises were conducted in the 2010s, resulting in more records.

Tufted Puffin

Fratercula cirrhata

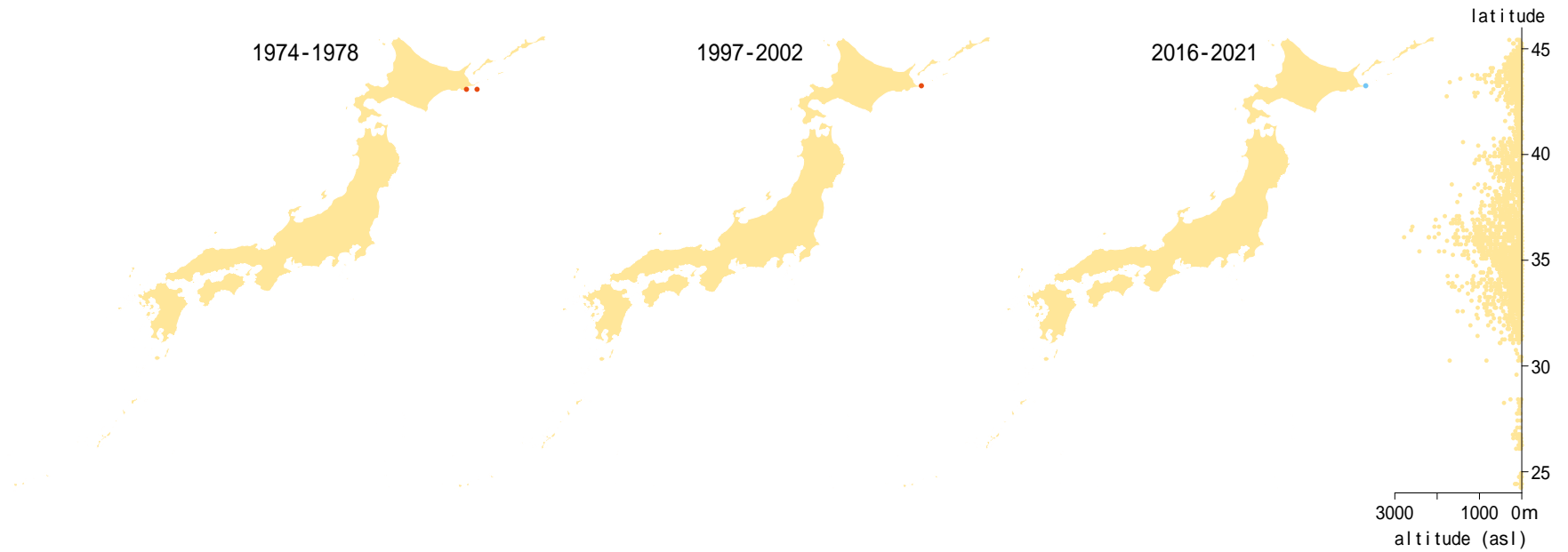
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	0	0
1997-2002	1	0	0
2016-2021	0	0	1

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



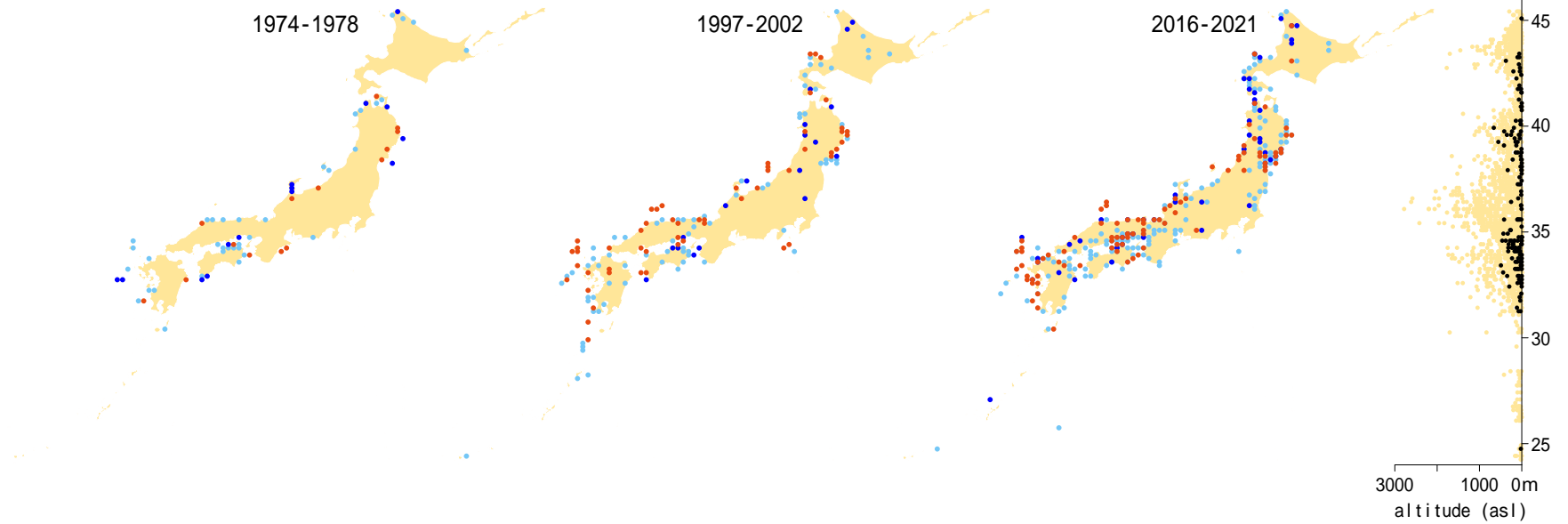
Western Osprey

Pandion haliaetus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	14	14	36
1997-2002	56	20	74
2016-2021	88	34	130

Recorded survey sites	
1997-2002	92
2016-2021	132



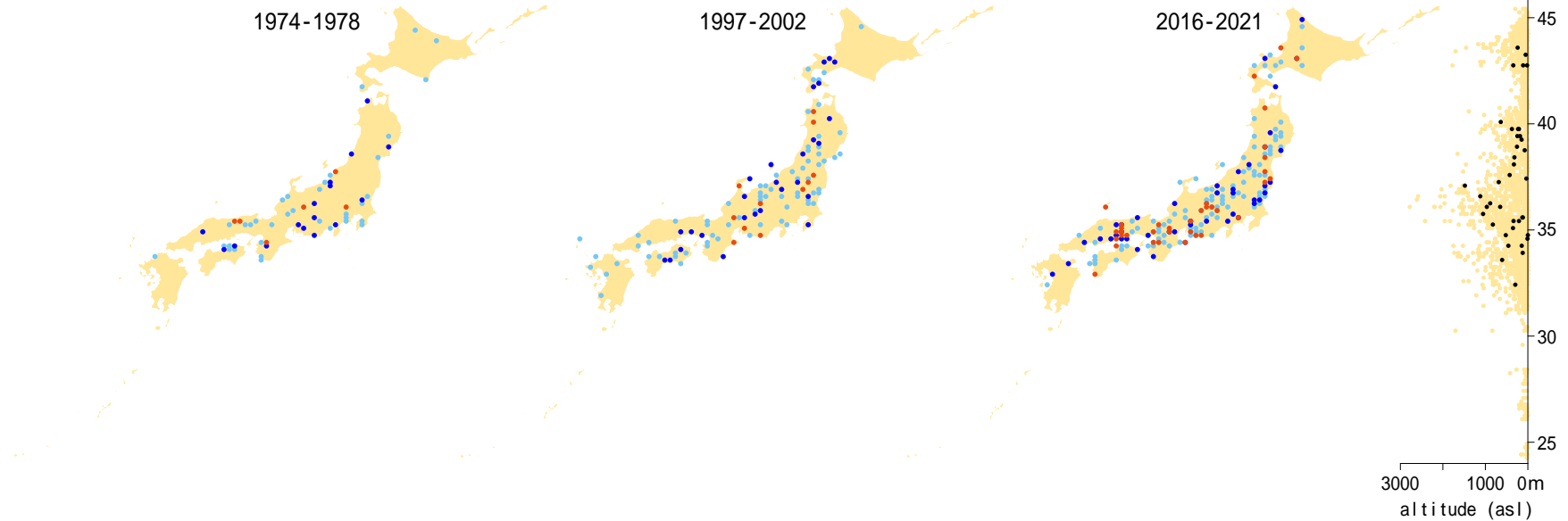
Crested Honey Buzzard

Pernis ptilorhynchus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	6	16	35
1997-2002	11	27	70
2016-2021	36	36	96

Recorded survey sites	
1997-2002	49
2016-2021	33



Black-winged Kite

Elanus caeruleus

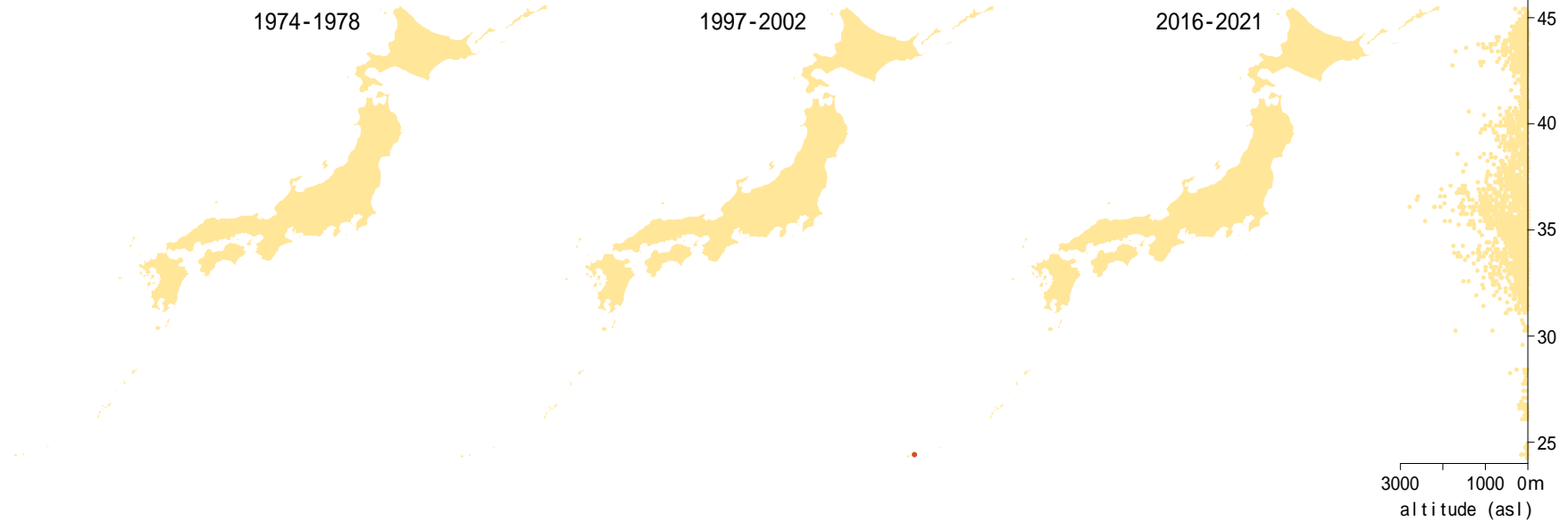
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



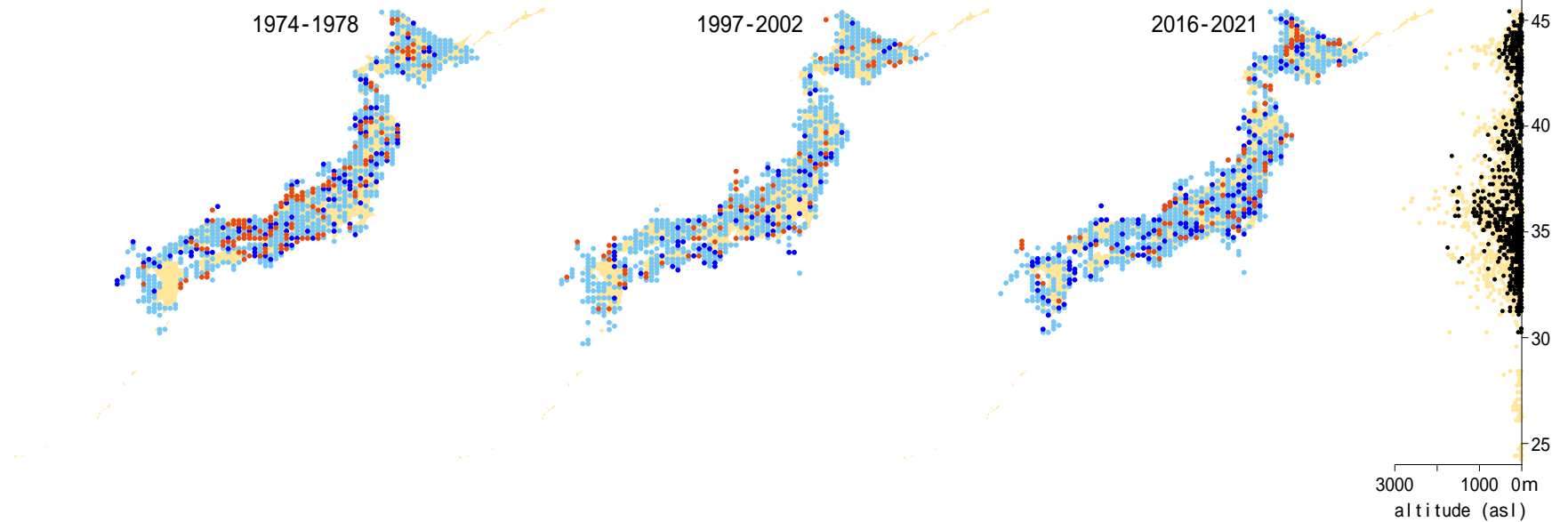
Black Kite

Milvus migrans

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	129	108	580
1997-2002	72	73	638
2016-2021	86	132	587

Recorded survey sites	
1997-2002	929
2016-2021	709



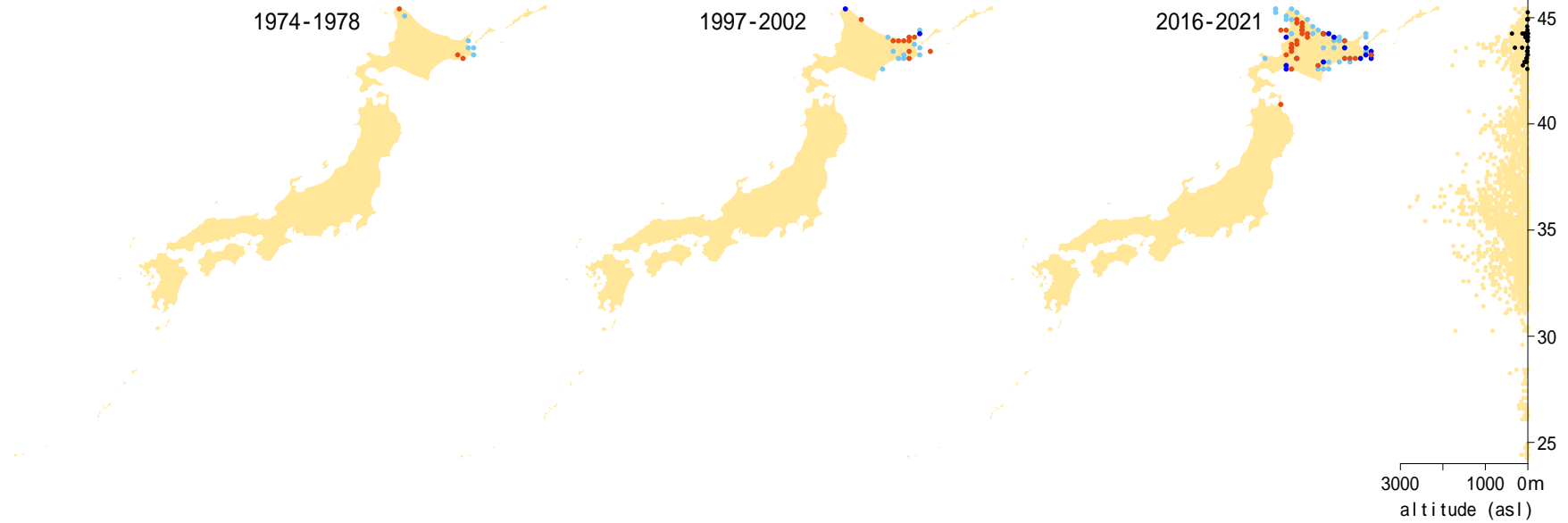
White-tailed Eagle

Haliaeetus albicilla

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	3	0	5
1997-2002	10	2	10
2016-2021	26	12	27

Recorded survey sites	
1997-2002	13
2016-2021	31



Crested Serpent Eagle

Spilornis cheela

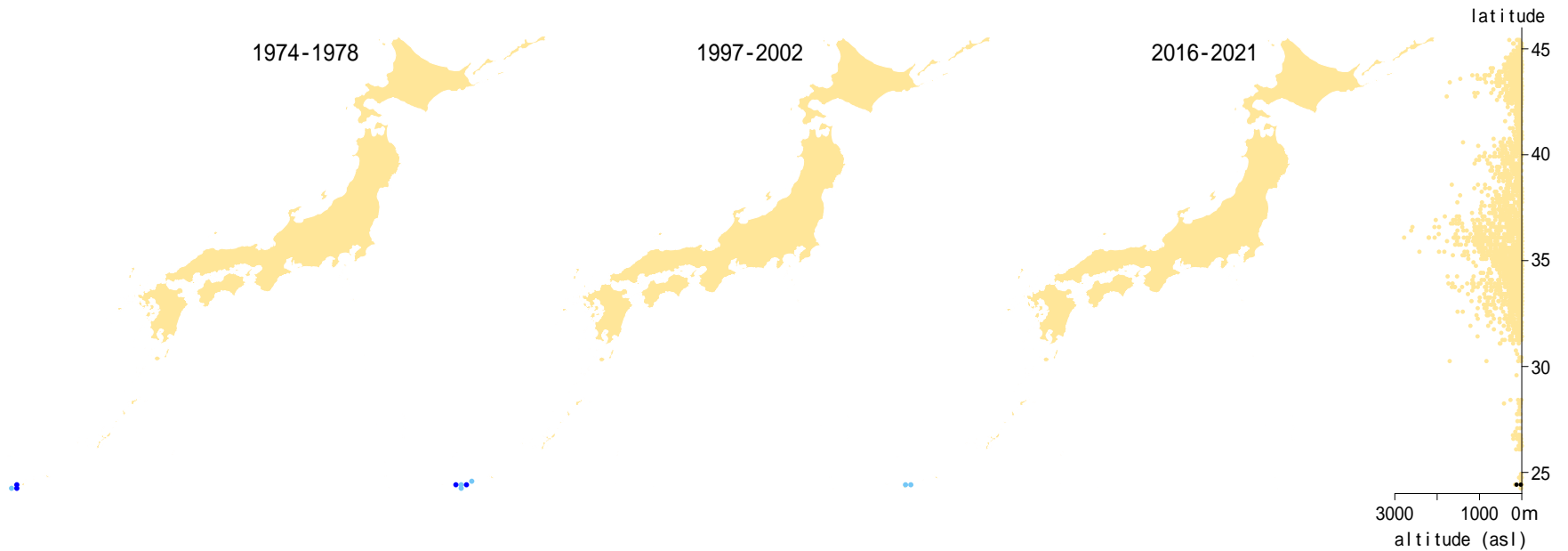
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	2	1
1997-2002	0	2	3
2016-2021	0	0	2

Recorded survey sites	
1997-2002	5
2016-2021	2



Altitudinal distribution
survey sites
recorded sites



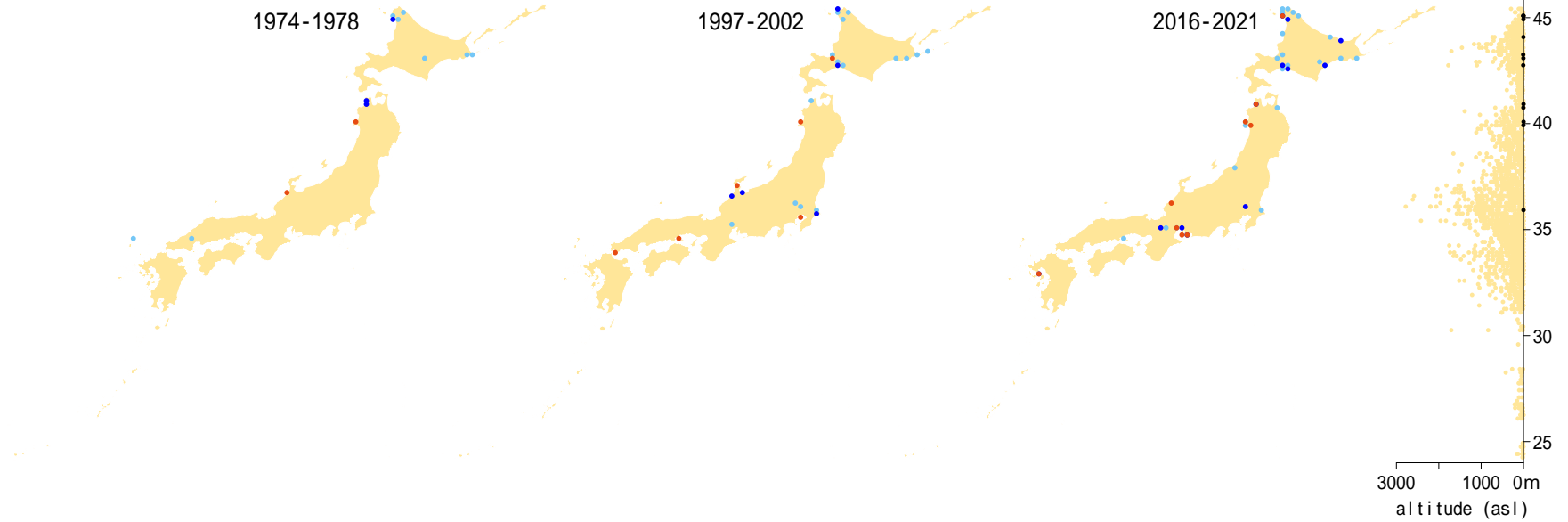
Eastern Marsh Harrier

Circus spilonotus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	2	3	8
1997-2002	6	5	15
2016-2021	9	8	20

Recorded survey sites	
1997-2002	12
2016-2021	11



Japanese Sparrowhawk

Accipiter gularis

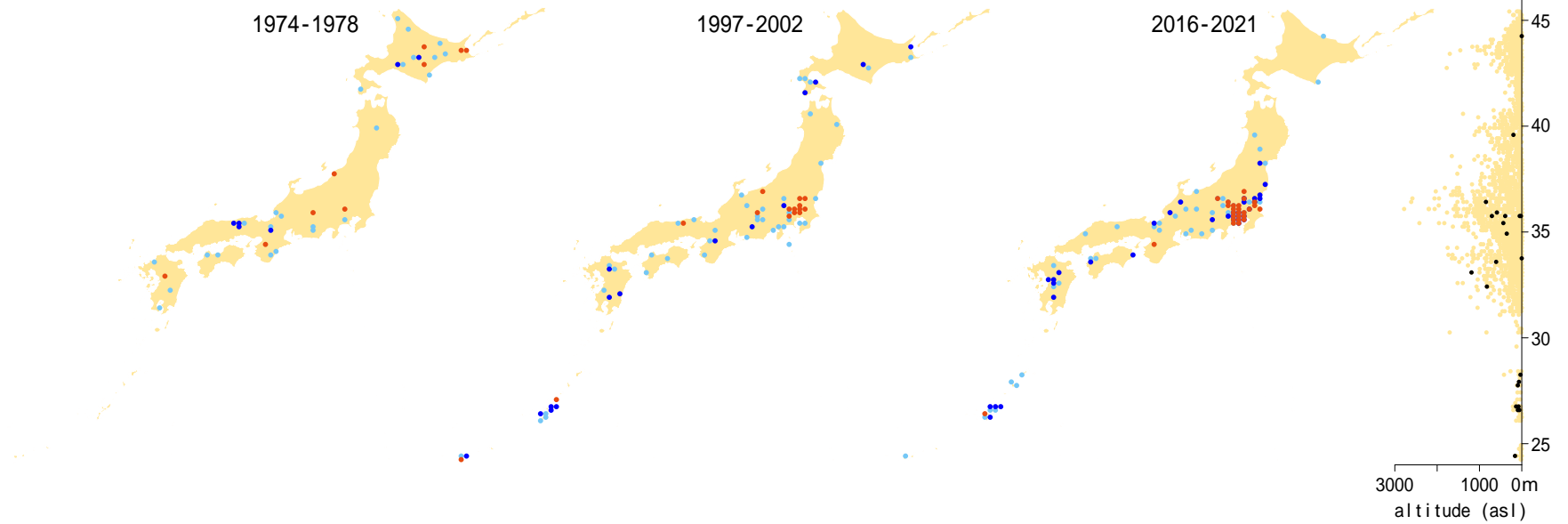
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	9	6	24
1997-2002	15	15	40
2016-2021	26	22	36

Recorded survey sites	
1997-2002	24
2016-2021	18



Altitudinal distribution
survey sites
recorded sites



Eurasian Sparrowhawk

Accipiter nisus

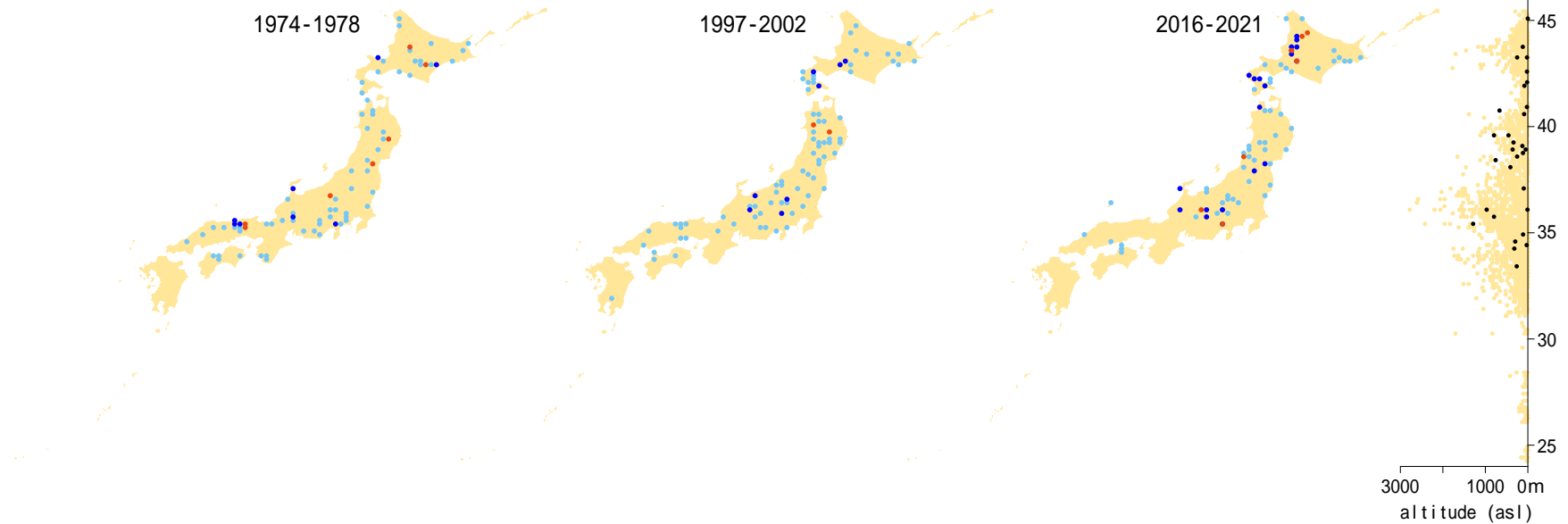
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	7	8	64
1997-2002	2	8	76
2016-2021	7	17	51

Recorded survey sites	
1997-2002	48
2016-2021	19



Altitudinal distribution
survey sites
recorded sites



Northern Goshawk

Accipiter gentilis

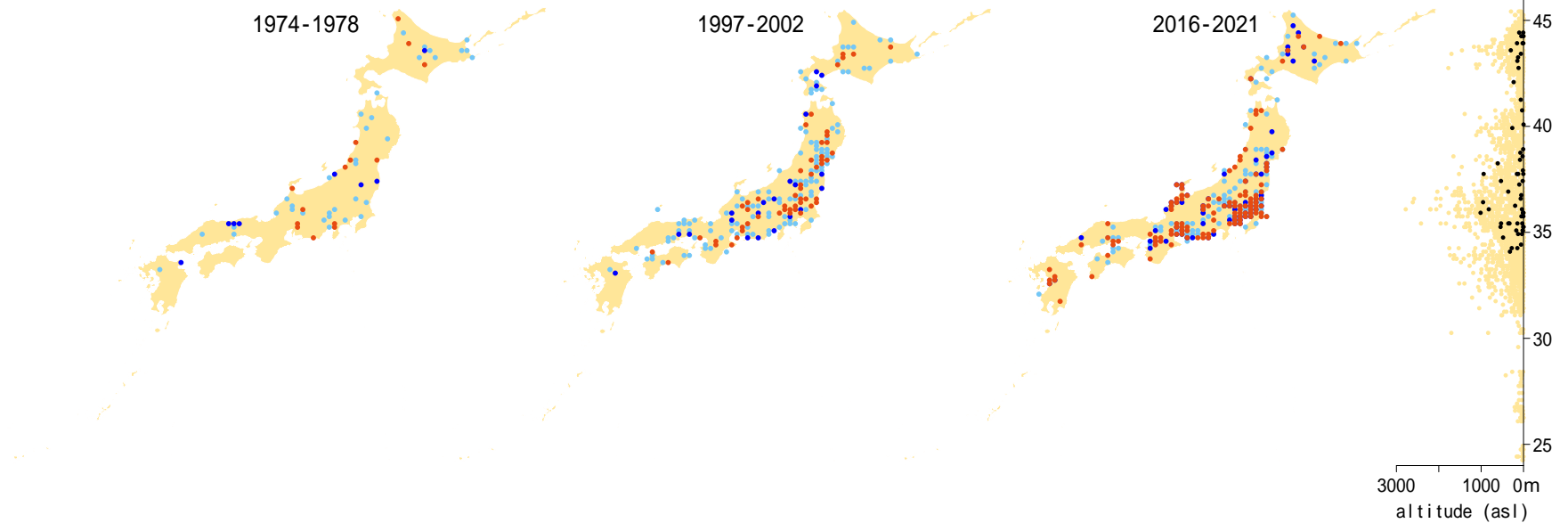
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	14	8	35
1997-2002	53	21	118
2016-2021	121	27	78

Recorded survey sites	
1997-2002	59
2016-2021	53



Altitudinal distribution
survey sites
recorded sites



Grey-faced Buzzard

Butastur indicus

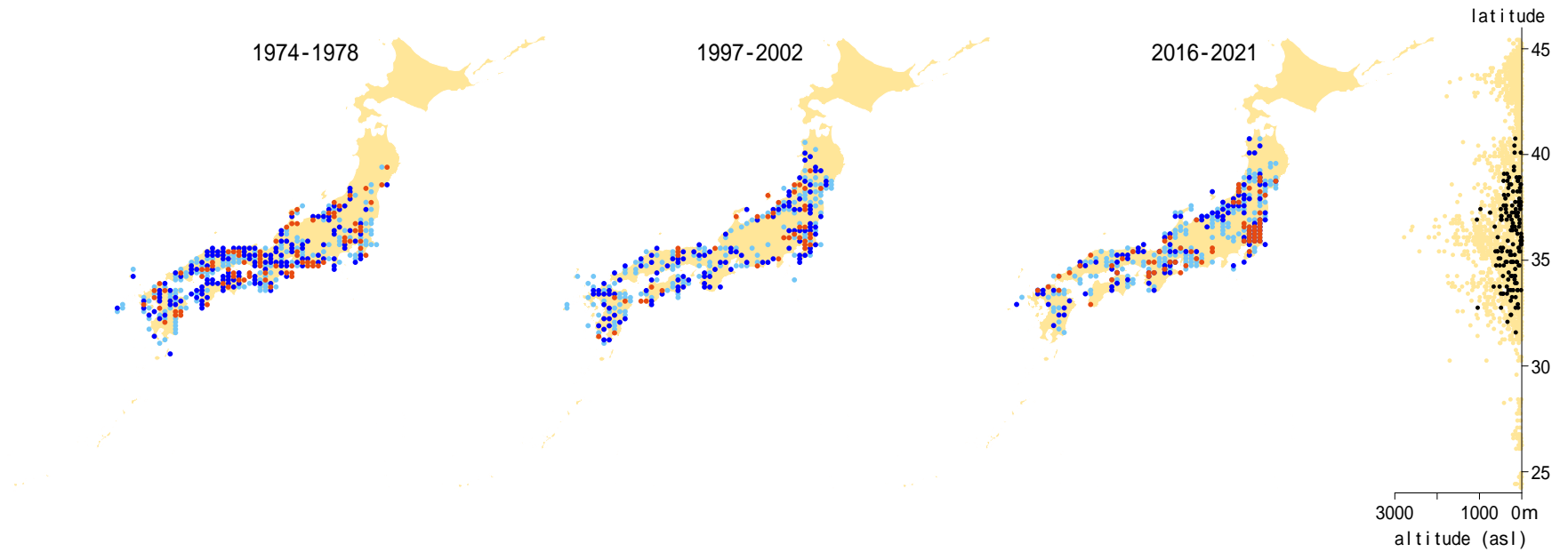
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	81	152	138
1997-2002	41	119	135
2016-2021	66	86	144

Recorded survey sites	
1997-2002	173
2016-2021	126



Altitudinal distribution
survey sites
recorded sites



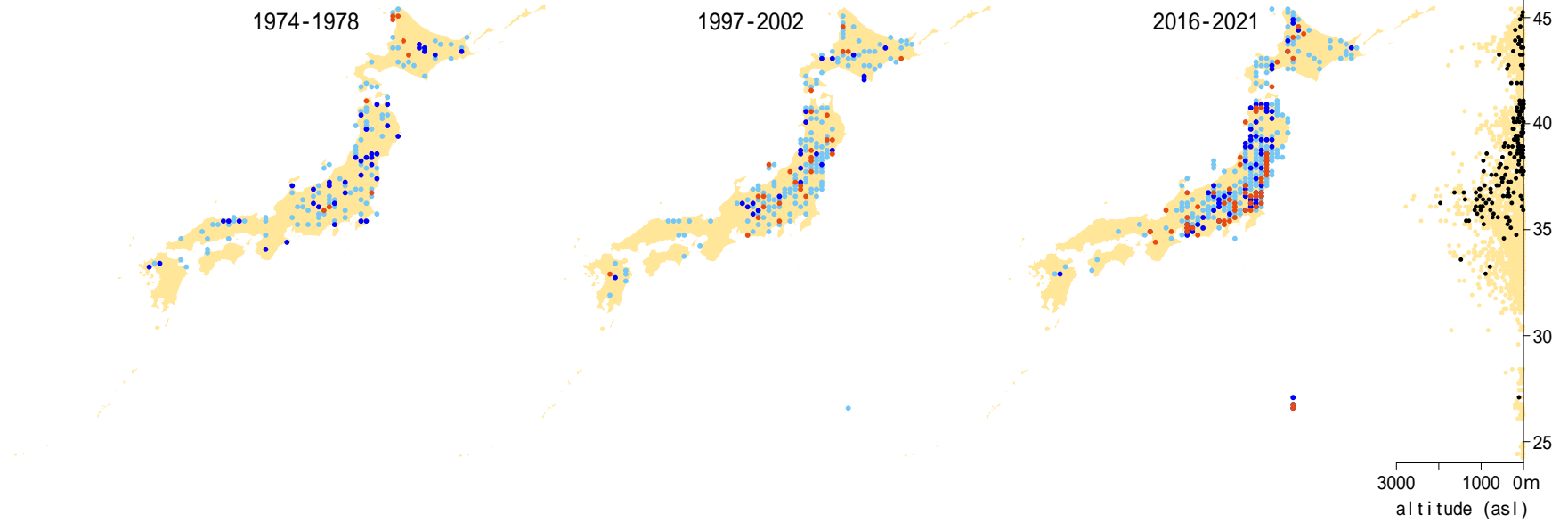
Eastern Buzzard

Buteo buteo

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	9	40	96
1997-2002	28	22	146
2016-2021	60	58	181

Recorded survey sites	
1997-2002	107
2016-2021	145



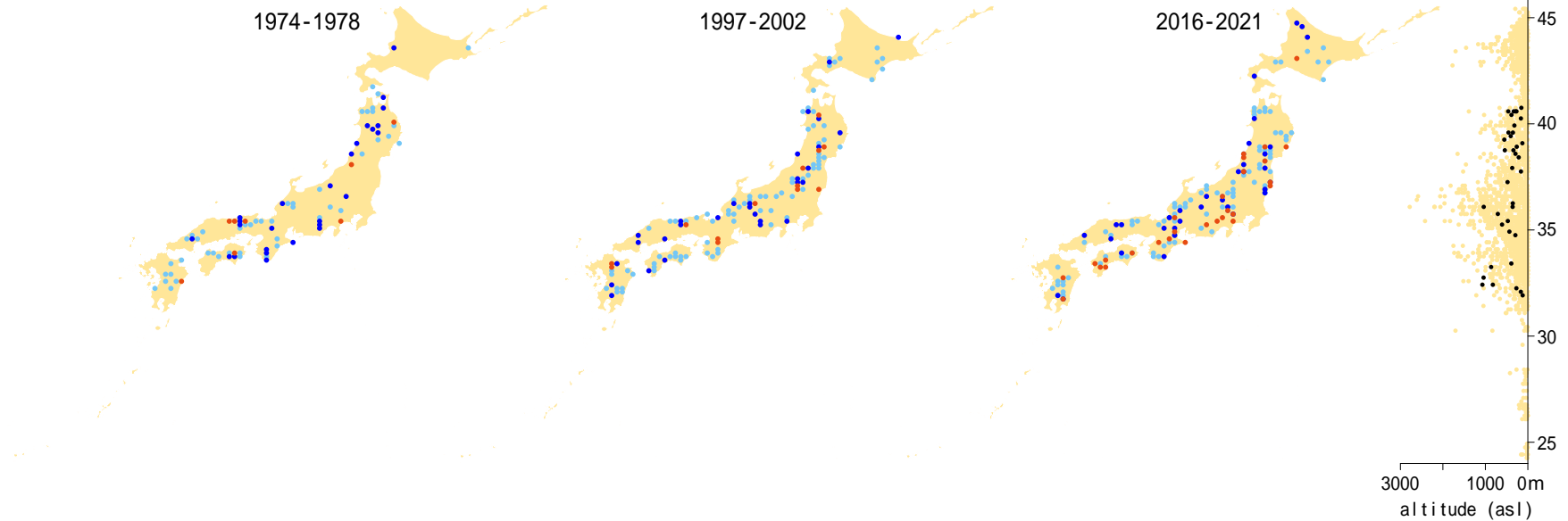
Mountain Hawk–Eagle

Nisaetus nipalensis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	8	26	46
1997-2002	13	29	81
2016-2021	29	29	81

Recorded survey sites	
1997-2002	32
2016-2021	31



Japanese Scops Owl

Otus lempiji

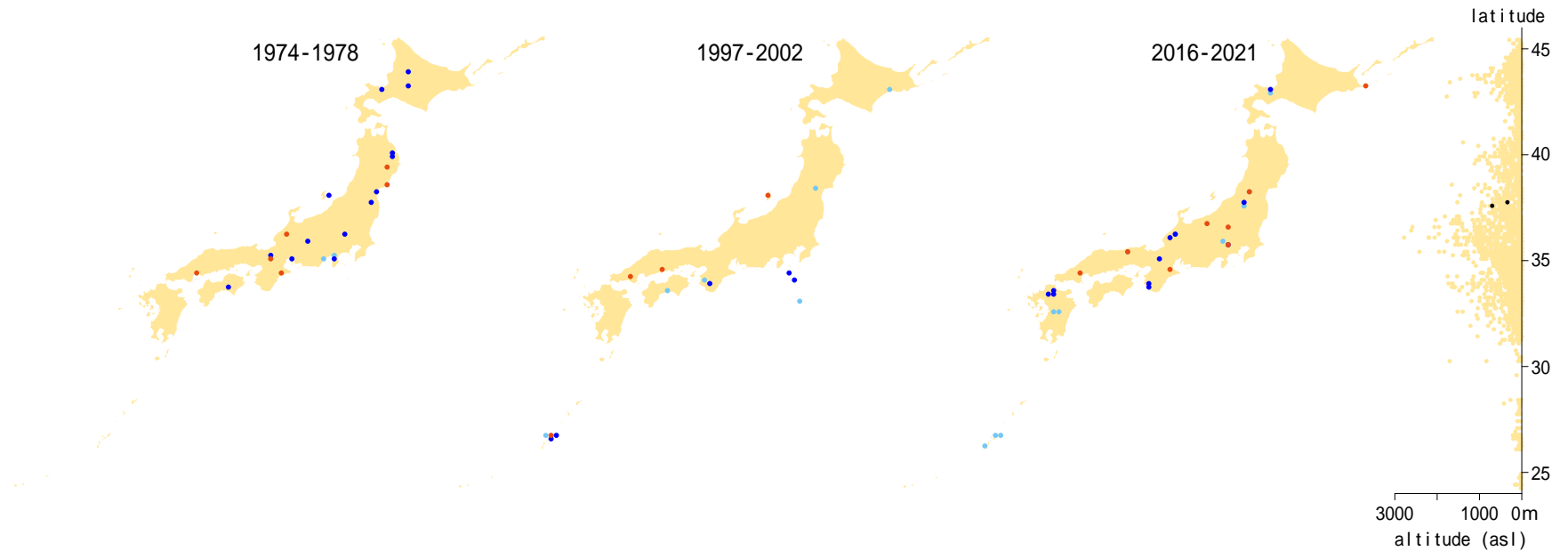
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	6	14	2
1997-2002	4	5	6
2016-2021	8	10	8

Recorded survey sites	
1997-2002	1
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



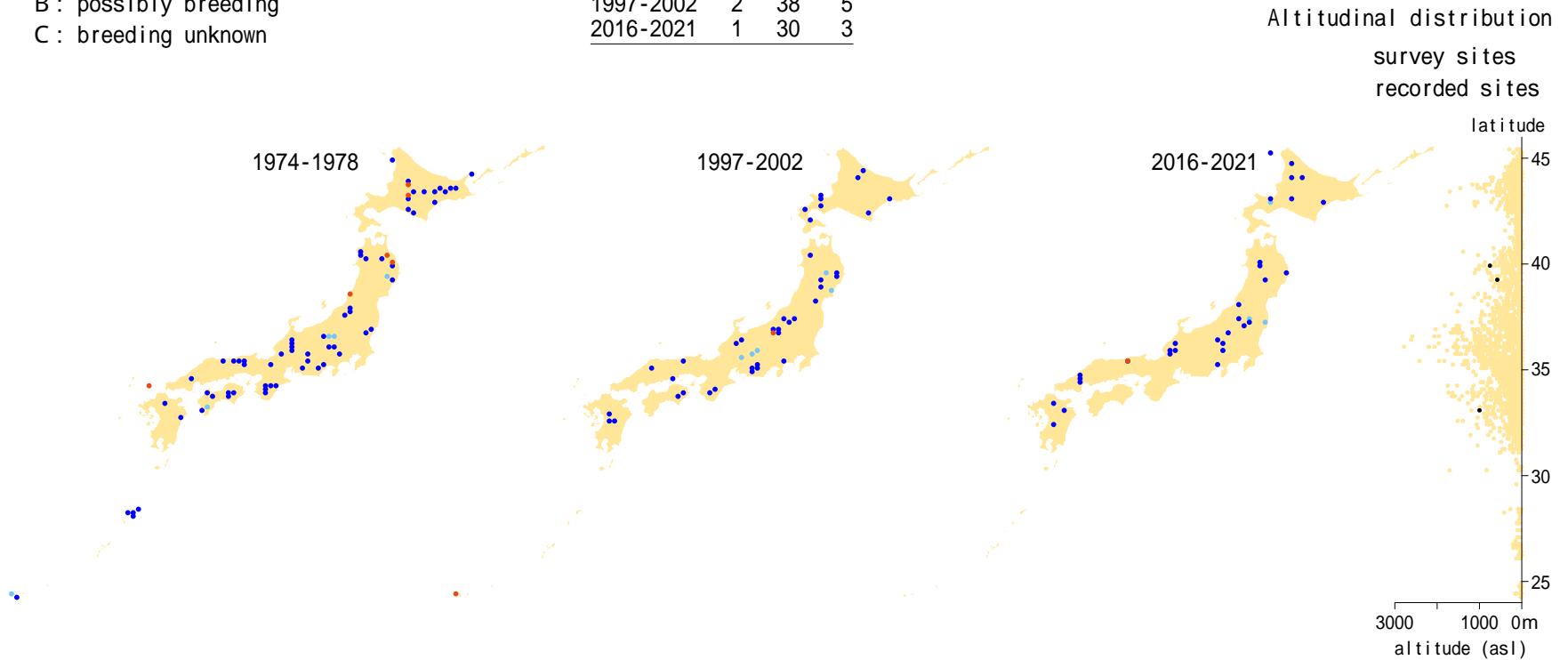
Oriental Scops Owl

Otus sunia

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	6	64	5
1997-2002	2	38	5
2016-2021	1	30	3

Recorded survey sites	
1997-2002	8
2016-2021	1



Note: records from the 1970s and 1990s include those of the Ryukyu Scops Owl as both were previously considered to be one species.

Ryukyu Scops Owl

Otus elegans

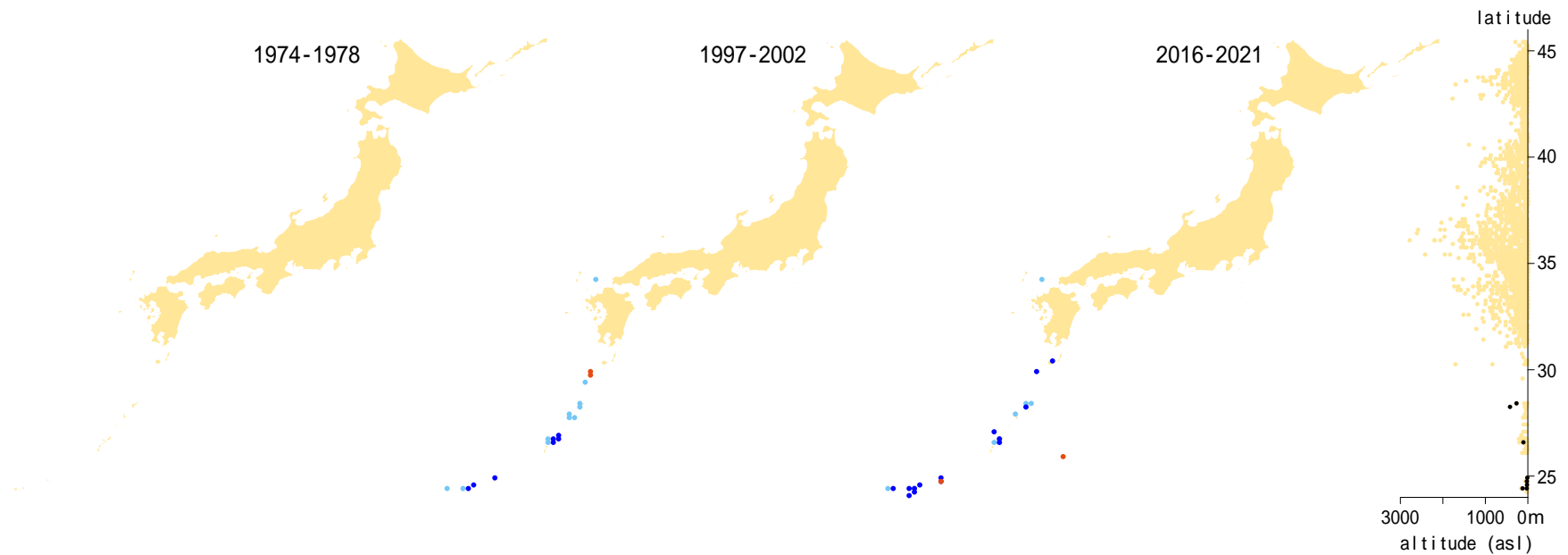
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	2	7	11
2016-2021	2	13	6

Recorded survey sites	
1997-2002	10
2016-2021	8



Altitudinal distribution
survey sites
recorded sites



Note: no records in the 1970s because it was recorded as an Oriental Scops Owl.

Ural Owl

Strix uralensis

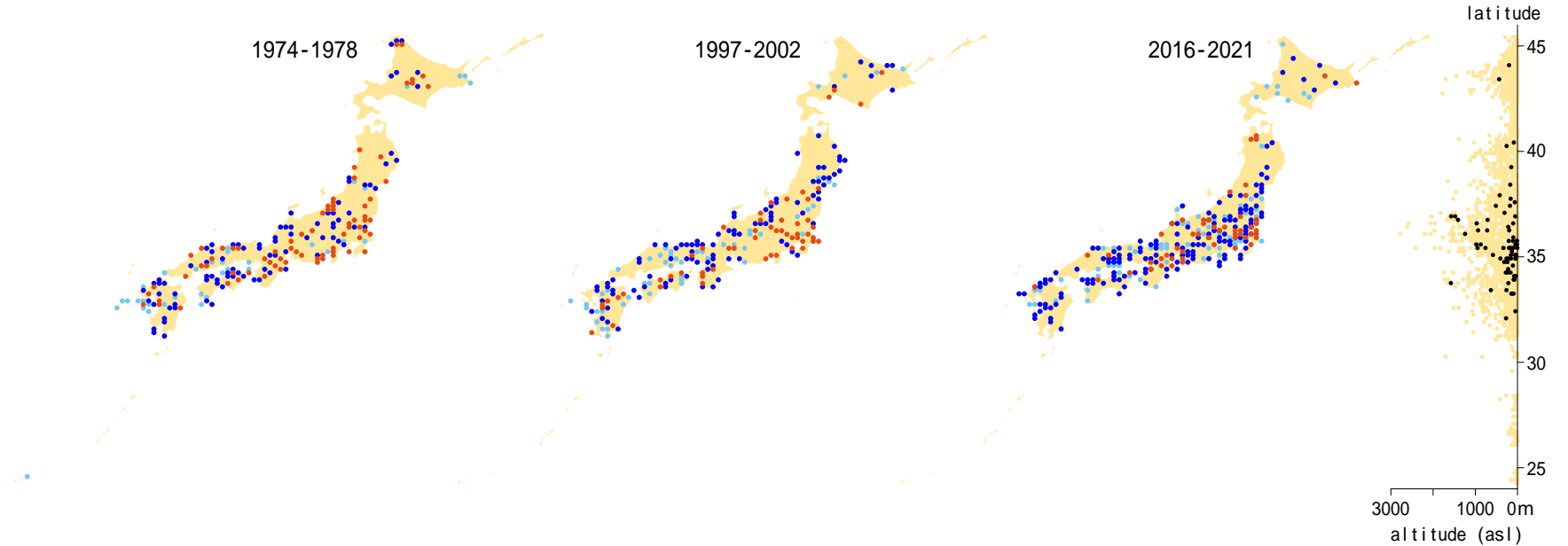
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	74	88	35
1997-2002	54	98	50
2016-2021	53	146	62

Recorded survey sites	
1997-2002	35
2016-2021	56



Altitudinal distribution
survey sites
recorded sites



Northern Boobook

Ninox scutulata

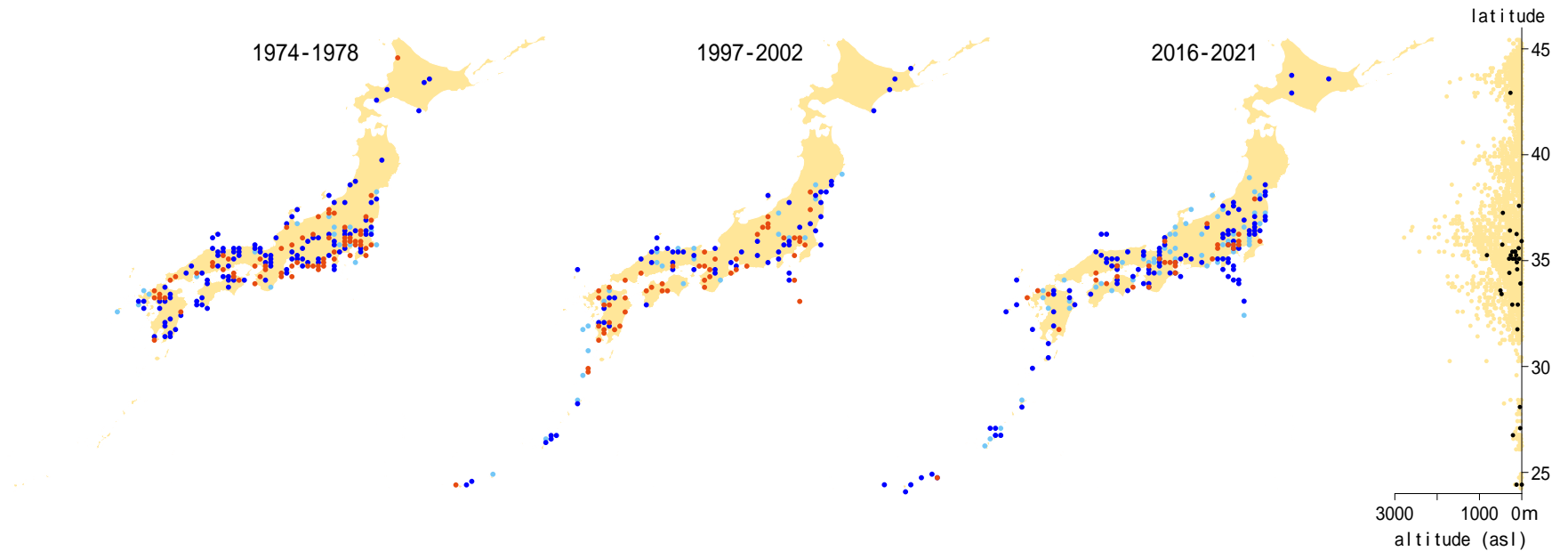
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	68	111	18
1997-2002	53	61	24
2016-2021	32	104	52

Recorded survey sites	
1997-2002	22
2016-2021	27



Altitudinal distribution
survey sites
recorded sites



Long-eared Owl

Asio otus

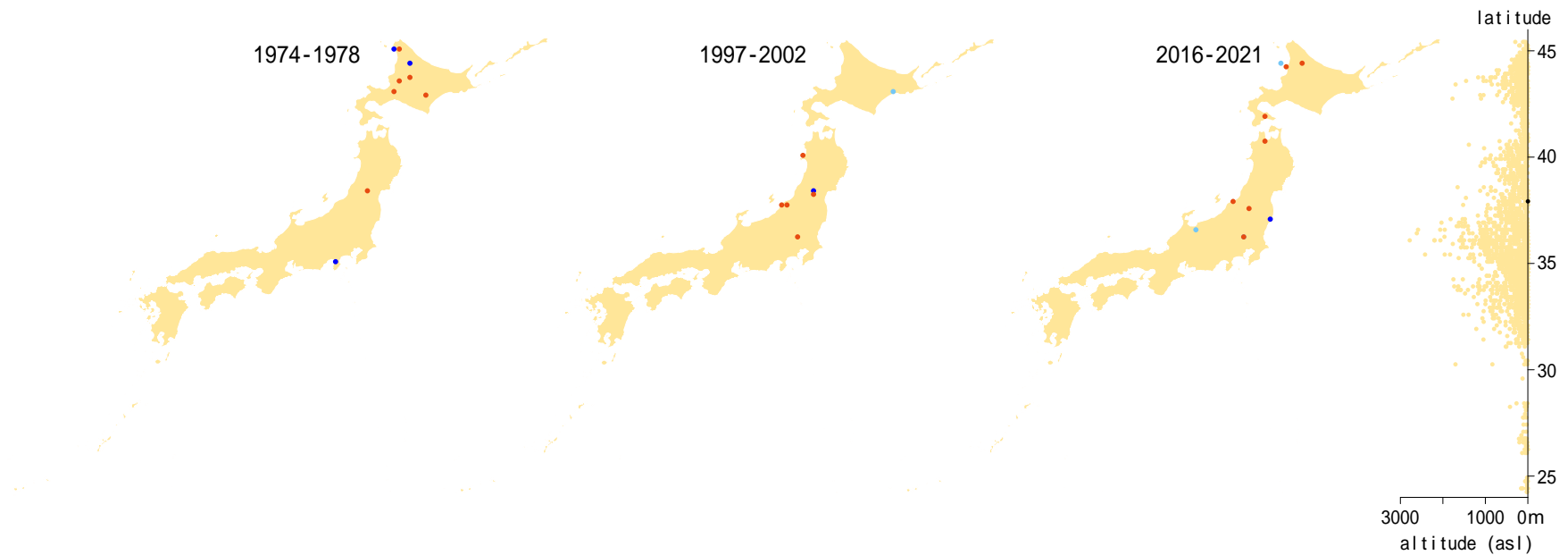
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	6	3	0
1997-2002	5	1	1
2016-2021	7	1	2

Recorded survey sites	
1997-2002	2
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



Short-eared Owl

Asio flammeus

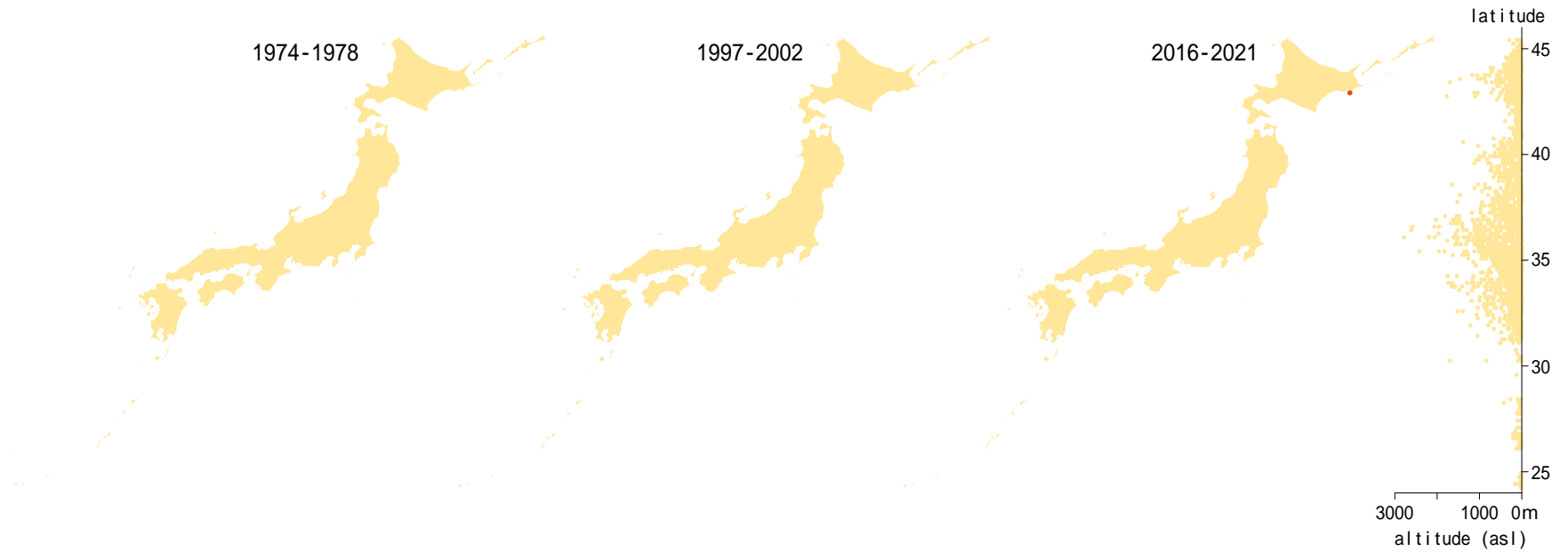
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



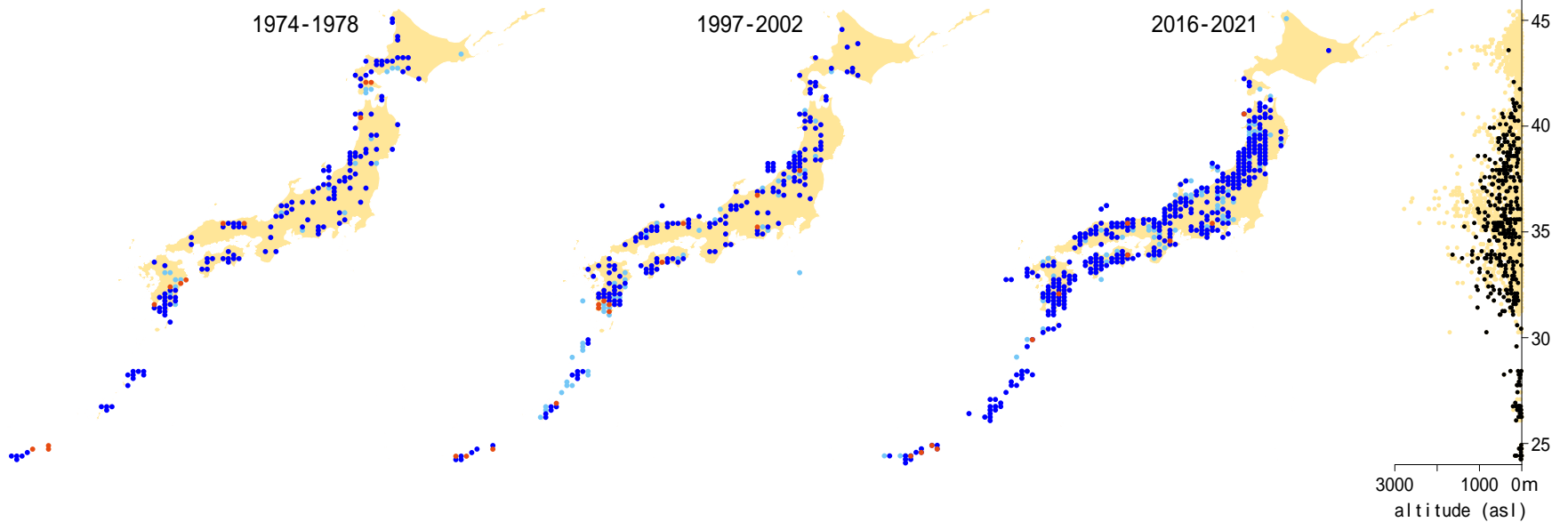
Ruddy Kingfisher

Halcyon coromanda

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	12	145	21
1997-2002	14	174	46
2016-2021	11	337	60

Recorded survey sites	
1997-2002	171
2016-2021	312



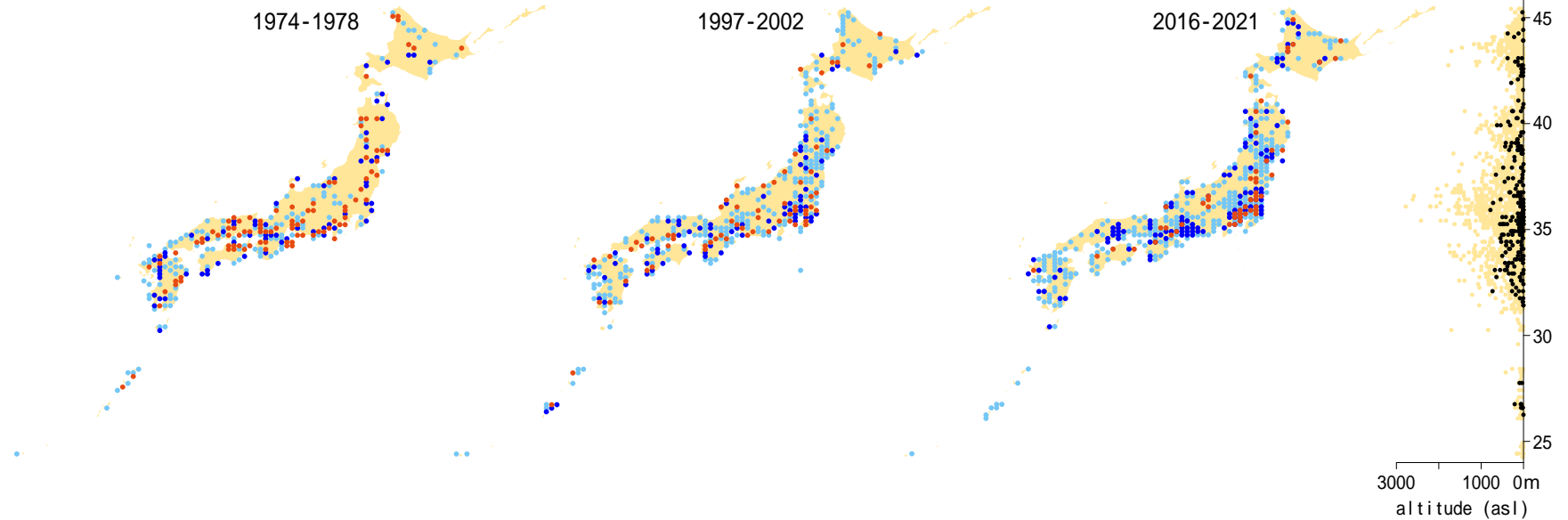
Common Kingfisher

Alcedo atthis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	97	68	126
1997-2002	67	74	250
2016-2021	54	101	286

Recorded survey sites	
1997-2002	252
2016-2021	230



Crested Kingfisher

Megaceryle lugubris

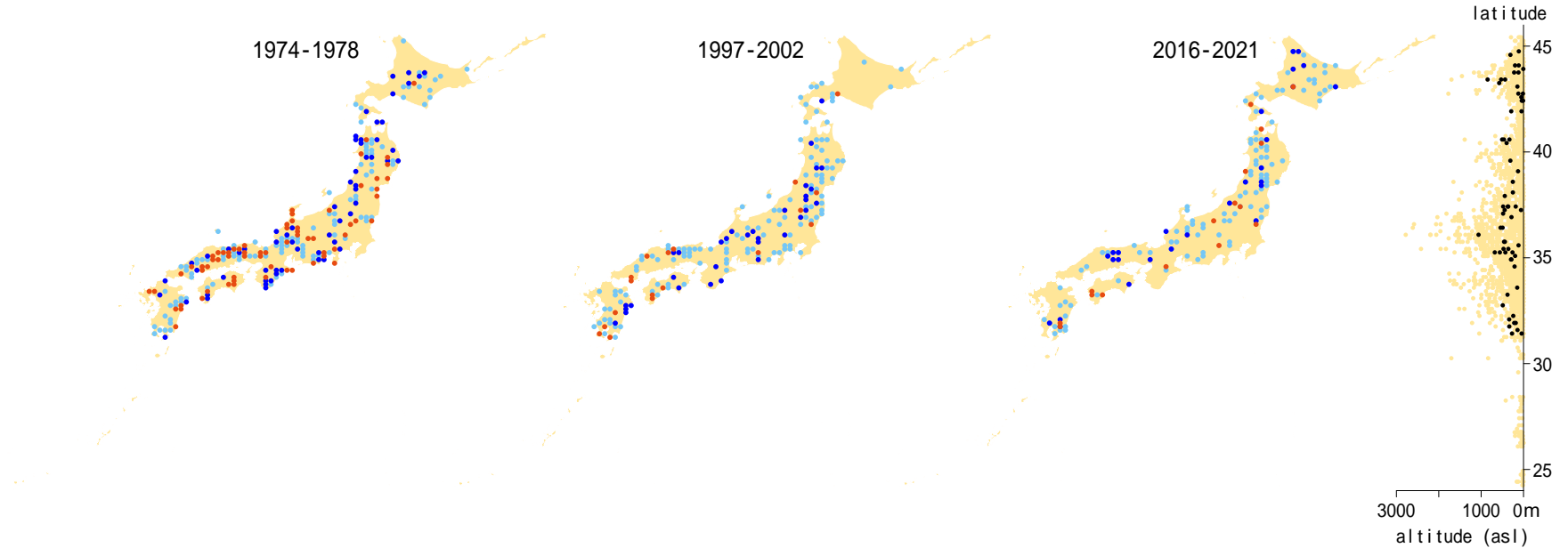
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	67	60	109
1997-2002	18	33	121
2016-2021	16	25	97

Recorded survey sites	
1997-2002	82
2016-2021	51



Altitudinal distribution
survey sites
recorded sites



Oriental Dollarbird

Eurystomus orientalis

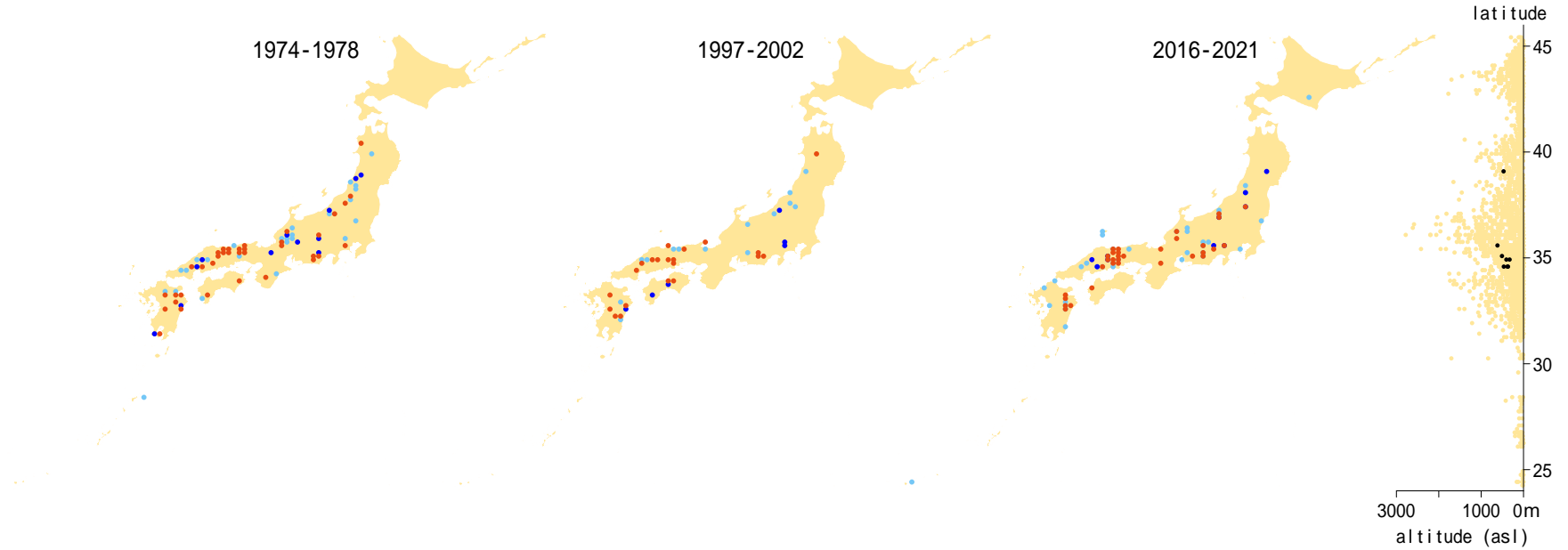
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	36	12	25
1997-2002	21	6	14
2016-2021	32	5	23

Recorded survey sites	
1997-2002	10
2016-2021	8



Altitudinal distribution
survey sites
recorded sites



Eurasian Wryneck

Jynx torquilla

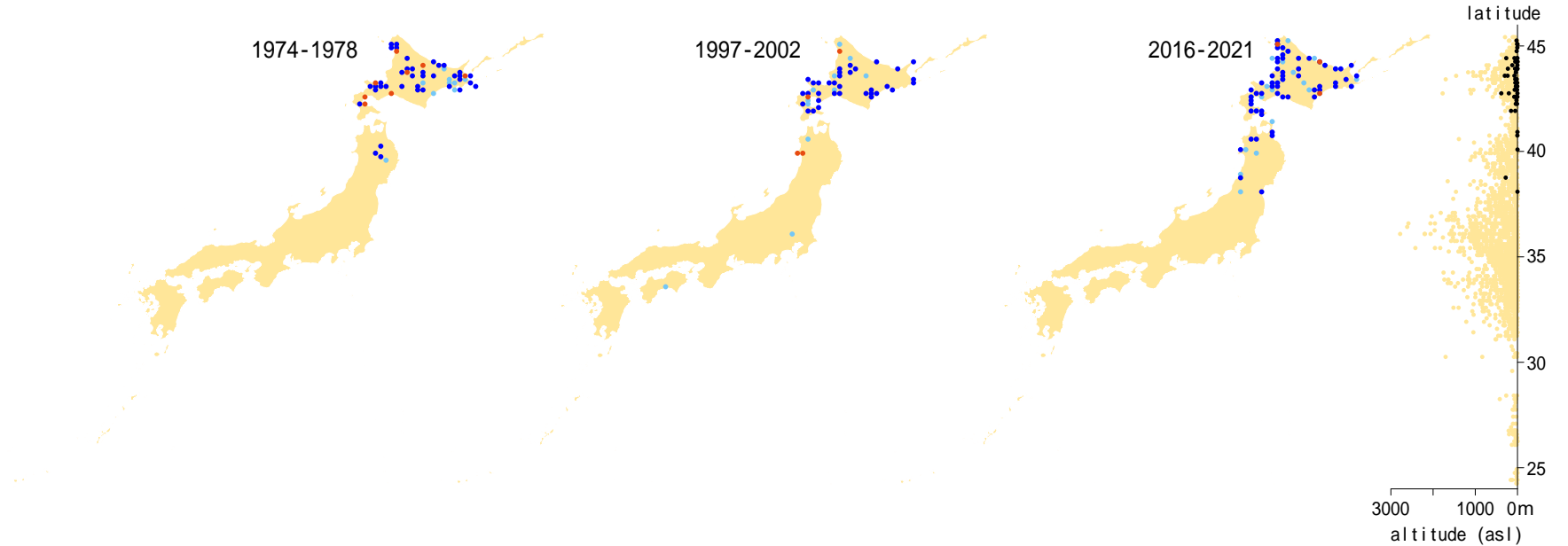
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	8	38	9
1997-2002	4	34	11
2016-2021	3	55	16

Recorded survey sites	
1997-2002	29
2016-2021	41



Altitudinal distribution
survey sites
recorded sites



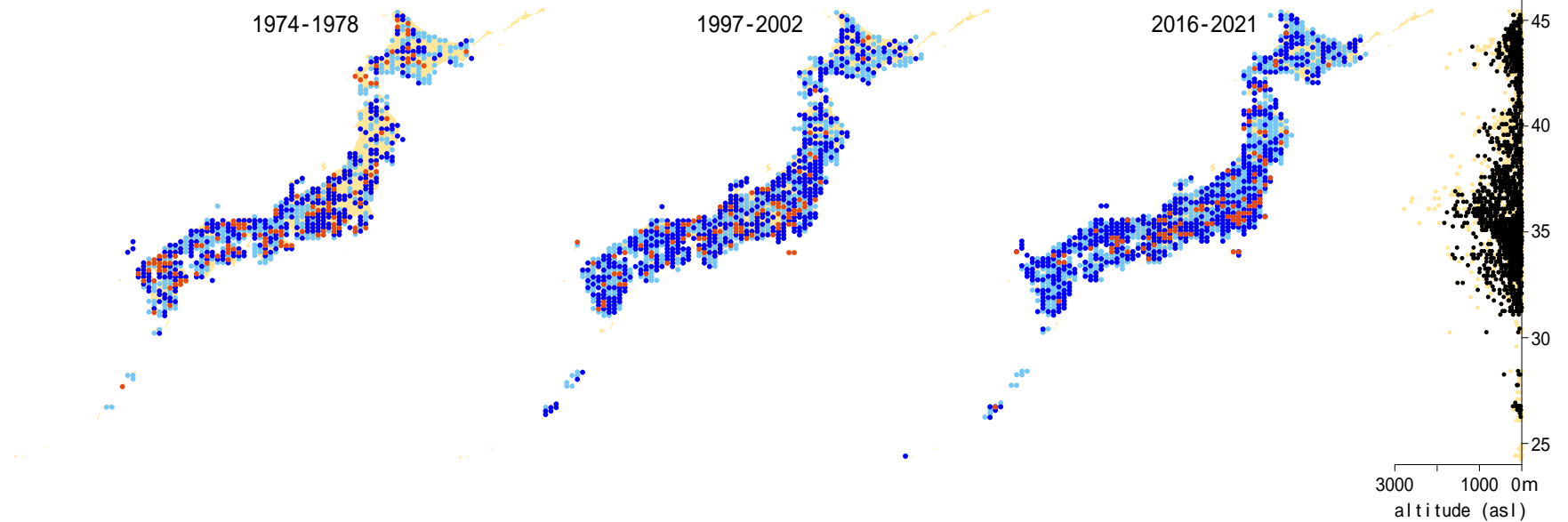
Japanese Pygmy Woodpecker

Dendrocopos kizuki

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	116	338	298
1997-2002	83	474	378
2016-2021	91	514	422

Recorded survey sites	
1997-2002	1158
2016-2021	1224



Lesser Spotted Woodpecker

Dendrocopos minor

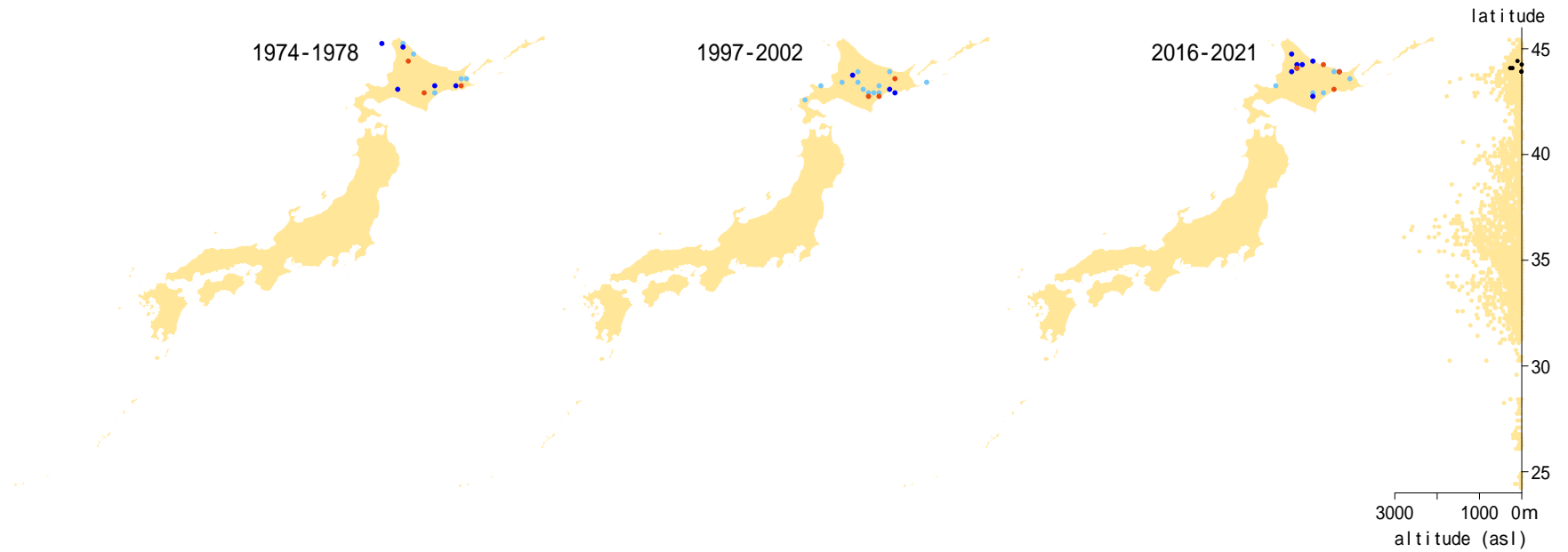
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	3	5	5
1997-2002	3	3	12
2016-2021	4	6	5

Recorded survey sites	
1997-2002	7
2016-2021	5



Altitudinal distribution
survey sites
recorded sites



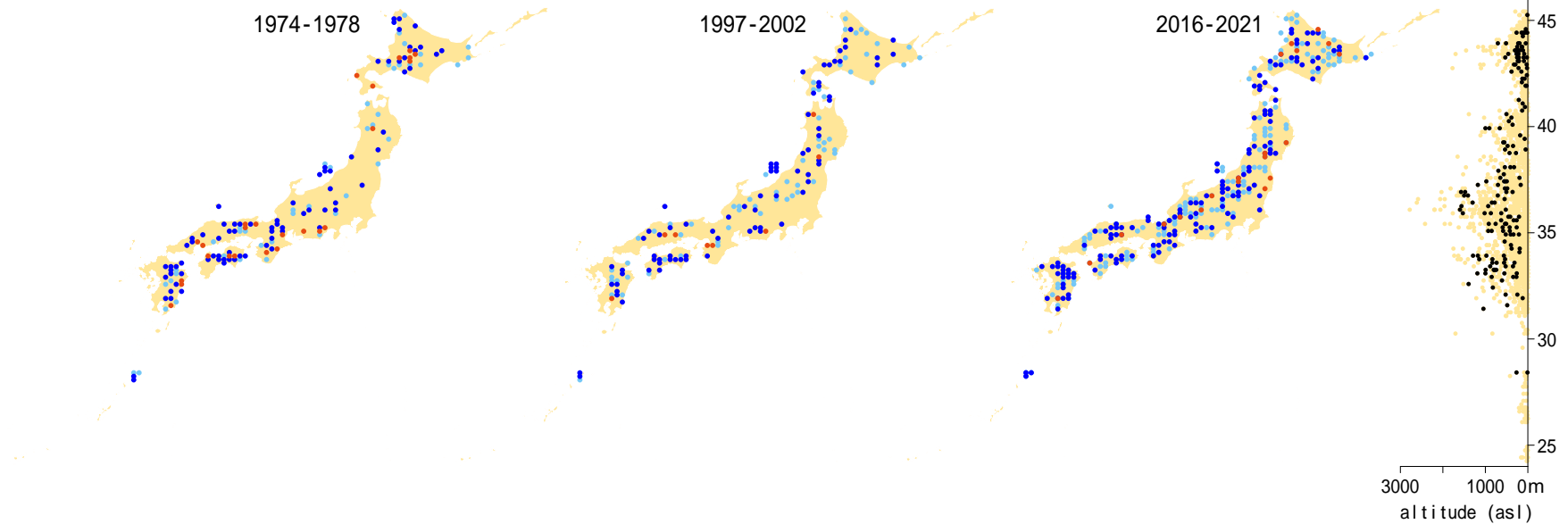
White-backed Woodpecker

Dendrocopos leucotos

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	25	79	43
1997-2002	8	76	62
2016-2021	20	138	123

Recorded survey sites	
1997-2002	87
2016-2021	137



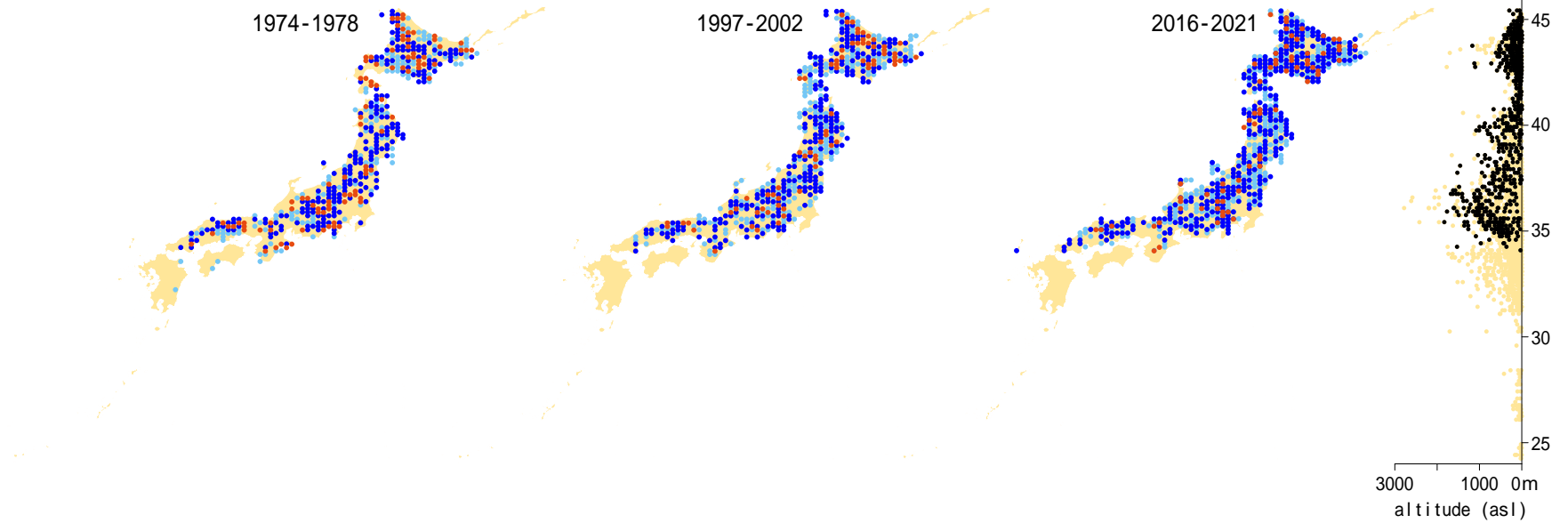
Great Spotted Woodpecker

Dendrocopos major

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	95	233	138
1997-2002	72	260	200
2016-2021	69	338	204

Recorded survey sites	
1997-2002	541
2016-2021	576



Black Woodpecker

Dryocopus martius

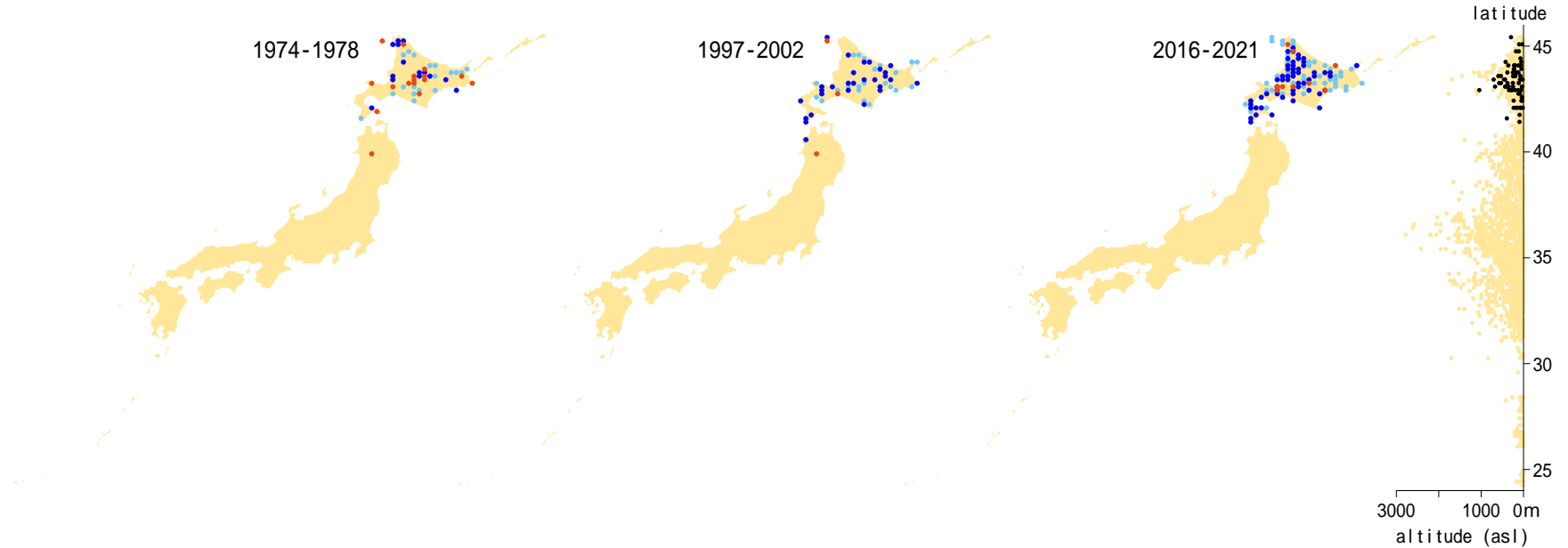
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	16	14	18
1997-2002	3	28	22
2016-2021	9	51	42

Recorded survey sites	
1997-2002	36
2016-2021	60



Altitudinal distribution
survey sites
recorded sites



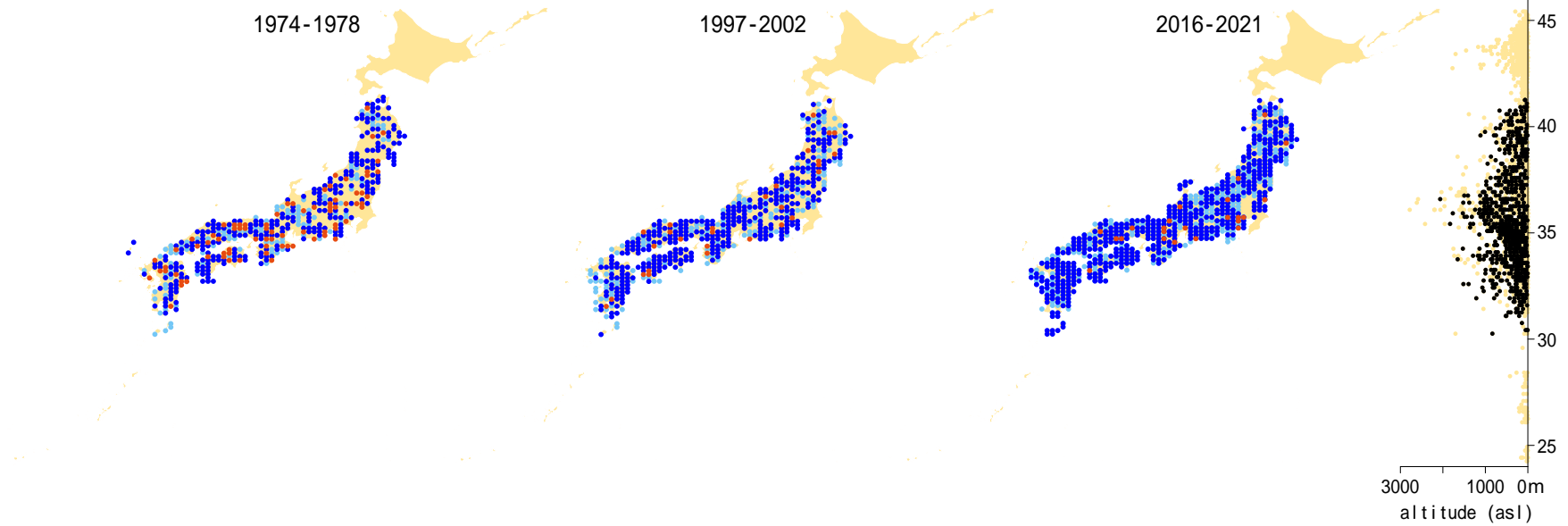
Japanese Green Woodpecker

Picus awokera

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	79	279	105
1997-2002	28	356	144
2016-2021	23	496	155

Recorded survey sites	
1997-2002	531
2016-2021	715



Grey-headed Woodpecker

Picus canus

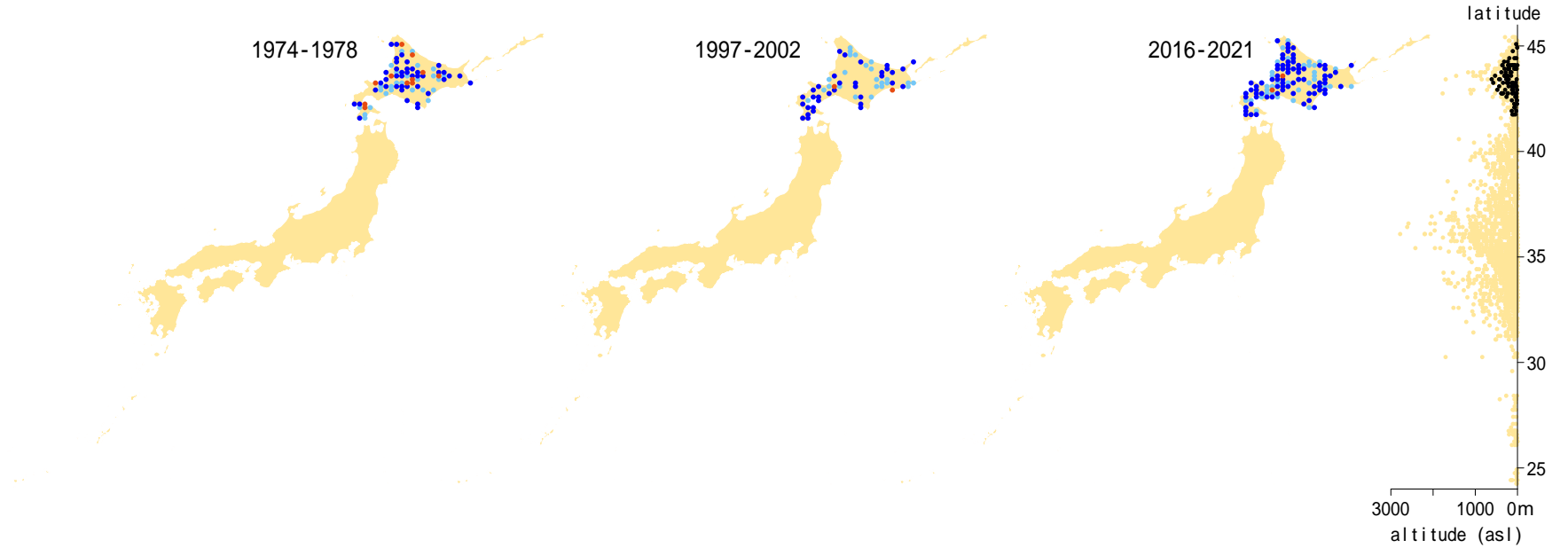
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	11	41	26
1997-2002	2	34	24
2016-2021	2	76	34

Recorded survey sites	
1997-2002	38
2016-2021	78



Altitudinal distribution
survey sites
recorded sites



Okinawa Woodpecker

Sapheopipo noguchii

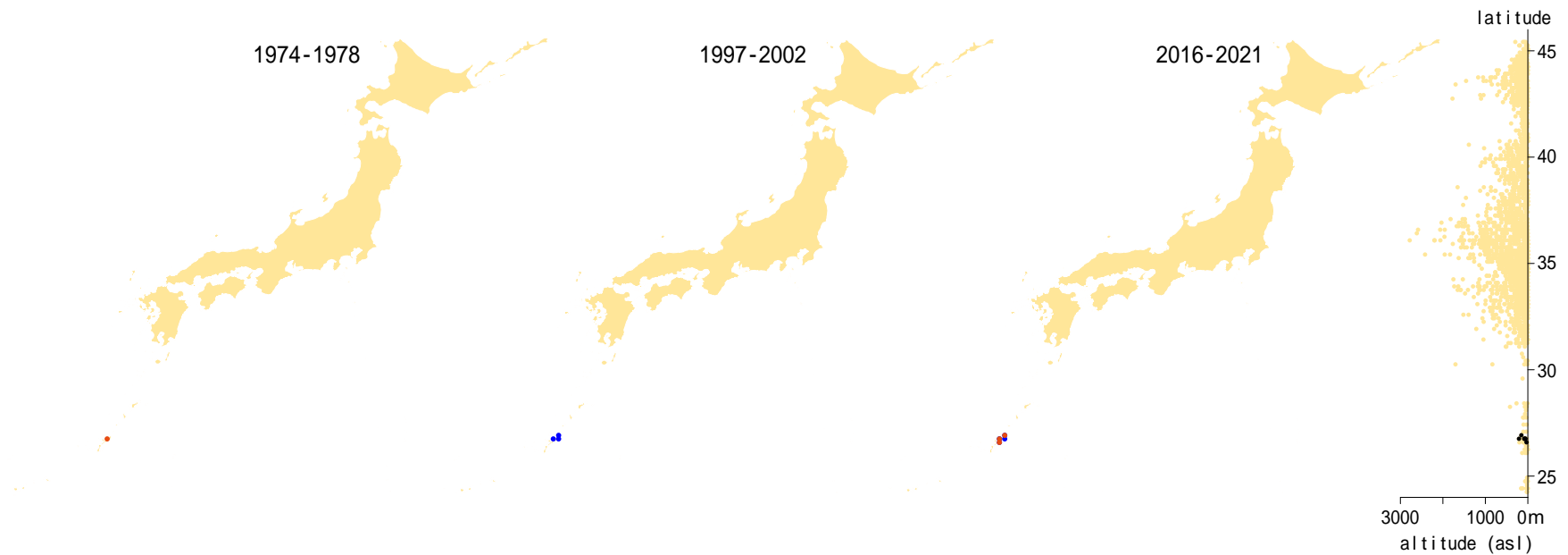
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	0	0
1997-2002	0	3	0
2016-2021	3	1	0

Recorded survey sites	
1997-2002	5
2016-2021	7



Altitudinal distribution
survey sites
recorded sites



Common Kestrel

Falco tinnunculus

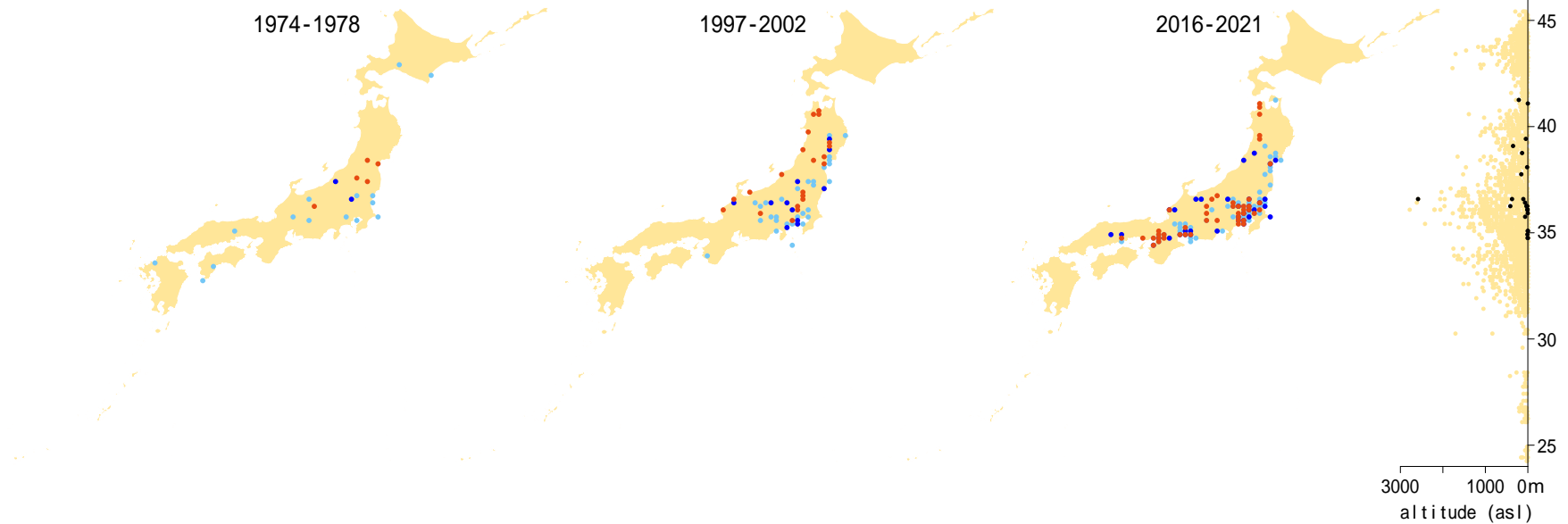
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	5	2	15
1997-2002	21	11	29
2016-2021	45	18	36

Recorded survey sites	
1997-2002	20
2016-2021	21



Altitudinal distribution
survey sites
recorded sites



Eurasian Hobby

Falco subbuteo

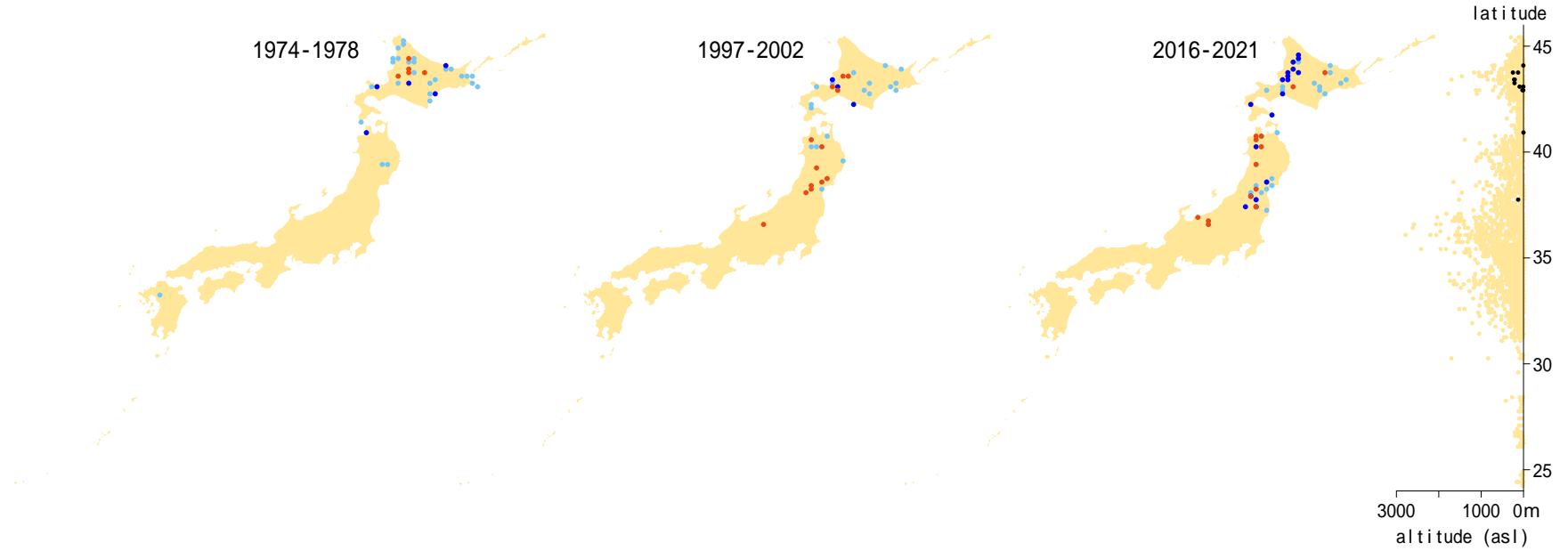
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	5	5	27
1997-2002	13	3	18
2016-2021	13	16	20

Recorded survey sites	
1997-2002	13
2016-2021	9



Altitudinal distribution
survey sites
recorded sites



Peregrine Falcon

Falco peregrinus

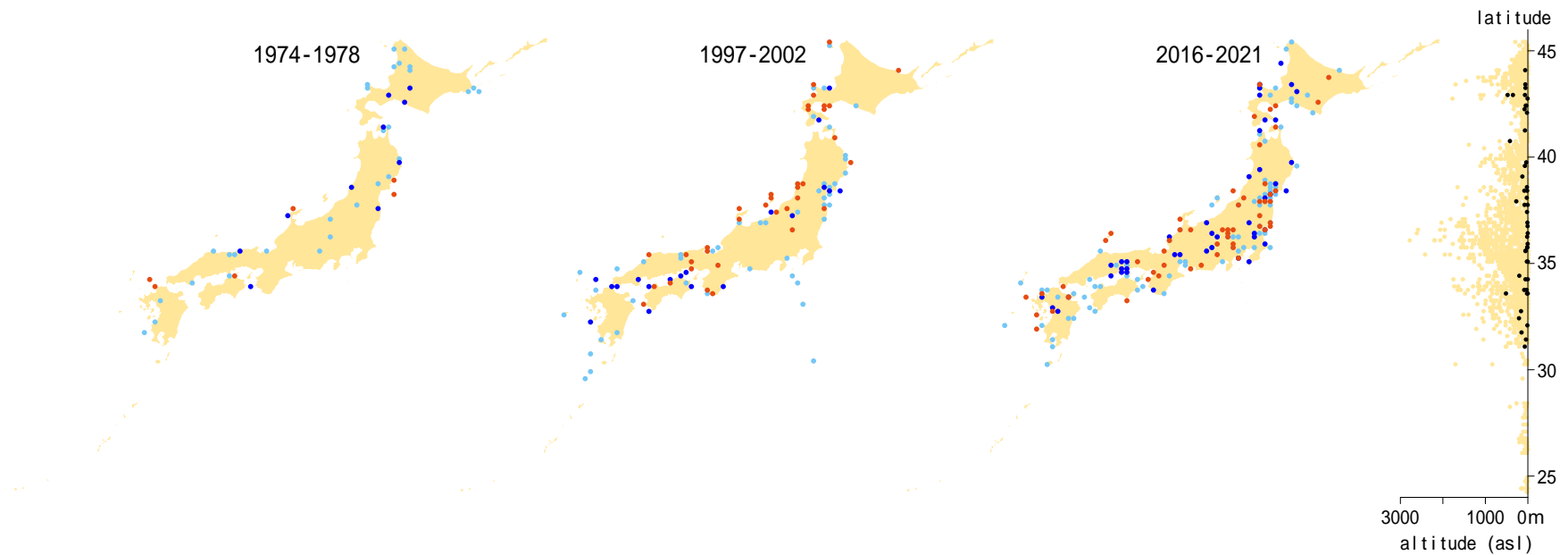
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	6	10	29
1997-2002	36	19	45
2016-2021	54	39	67

Recorded survey sites	
1997-2002	30
2016-2021	41



Altitudinal distribution
survey sites
recorded sites



Fairy Pitta

Pitta nympha

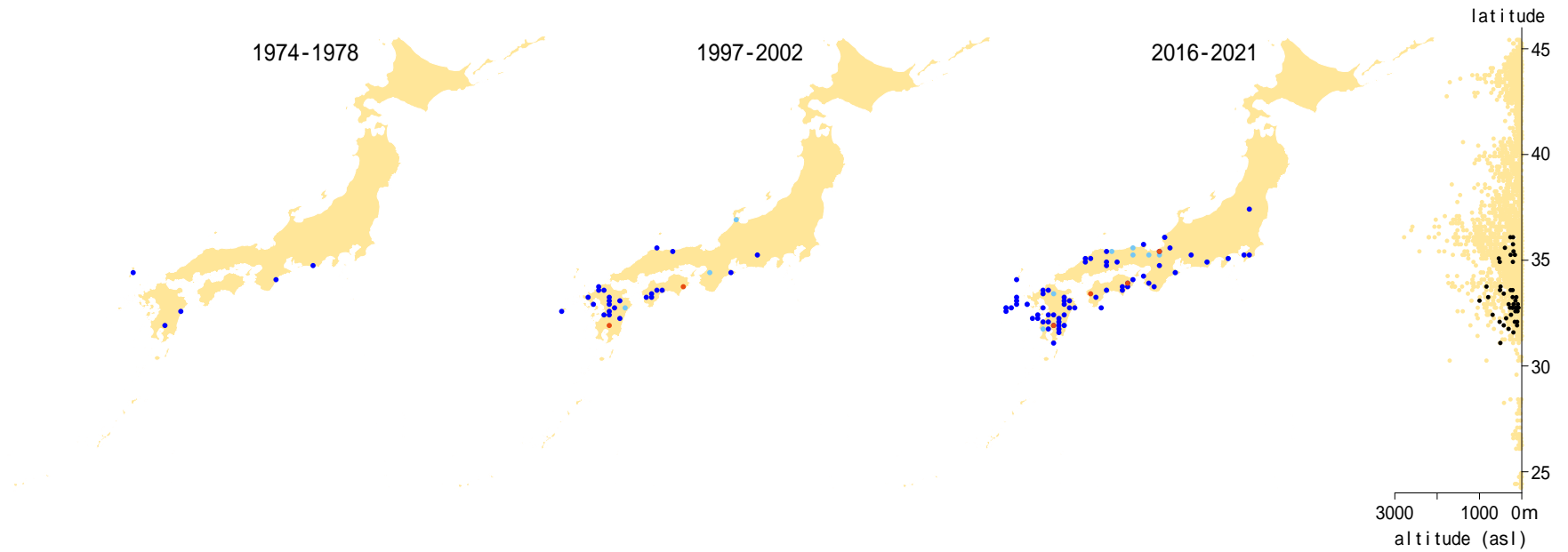
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	5	0
1997-2002	2	24	3
2016-2021	4	62	7

Recorded survey sites	
1997-2002	10
2016-2021	32



Altitudinal distribution
survey sites
recorded sites



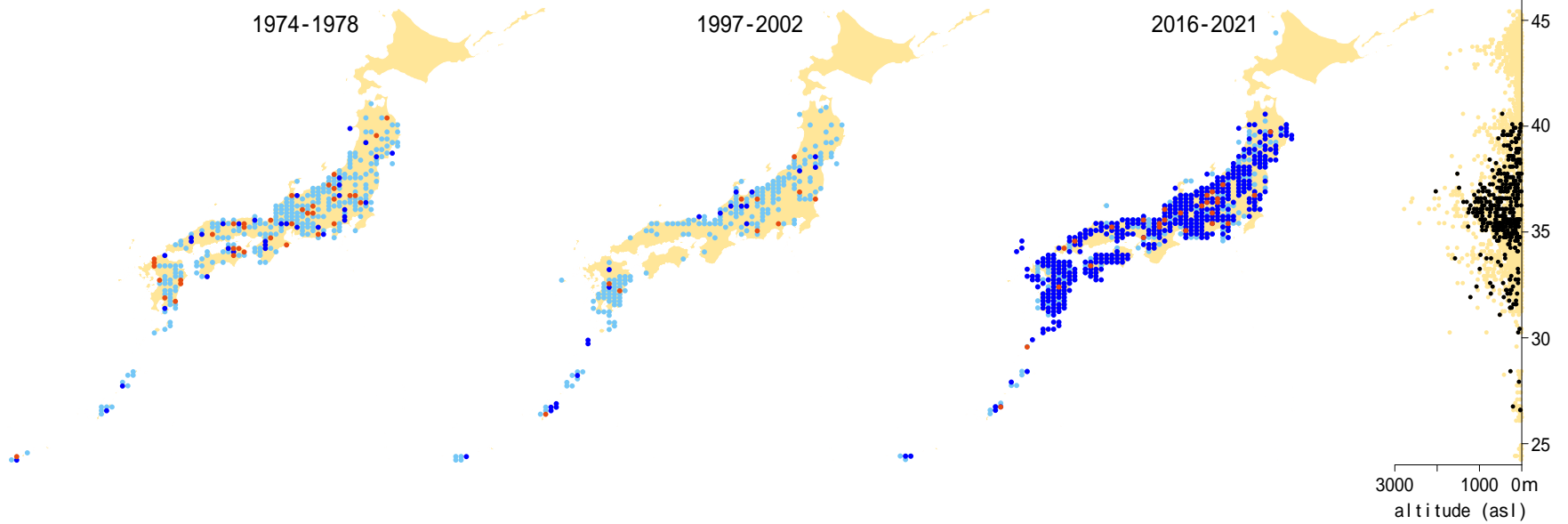
Ashy Minivet

Pericrocotus divaricatus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	37	34	259
1997-2002	10	21	199
2016-2021	27	410	99

Recorded survey sites	
1997-2002	190
2016-2021	478



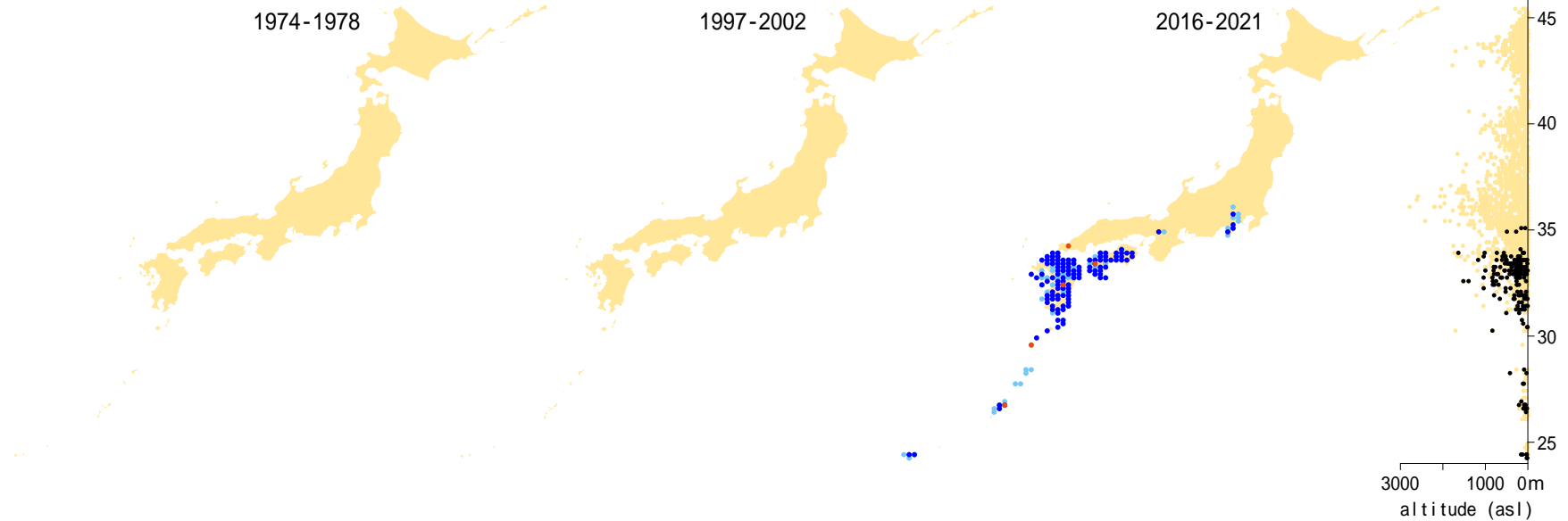
Ryukyu Minivet

Pericrocotus divaricatus tegimae

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	5	112	37

Recorded survey sites	
1997-2002	0
2016-2021	152



Note: no records in the 1970s and 1990s because subspecies were not recorded.

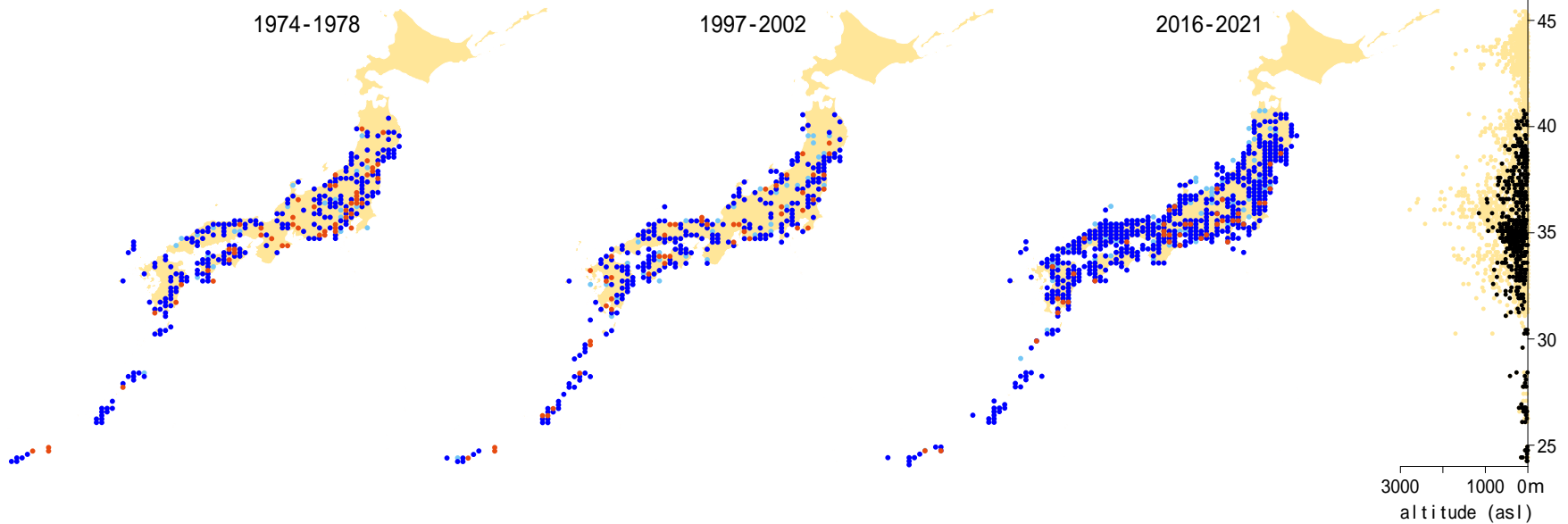
Japanese Paradise Flycatcher

Terpsiphone atrocaudata

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	51	230	22
1997-2002	48	242	33
2016-2021	40	480	49

Recorded survey sites	
1997-2002	204
2016-2021	411



Tiger Shrike

Lanius tigrinus

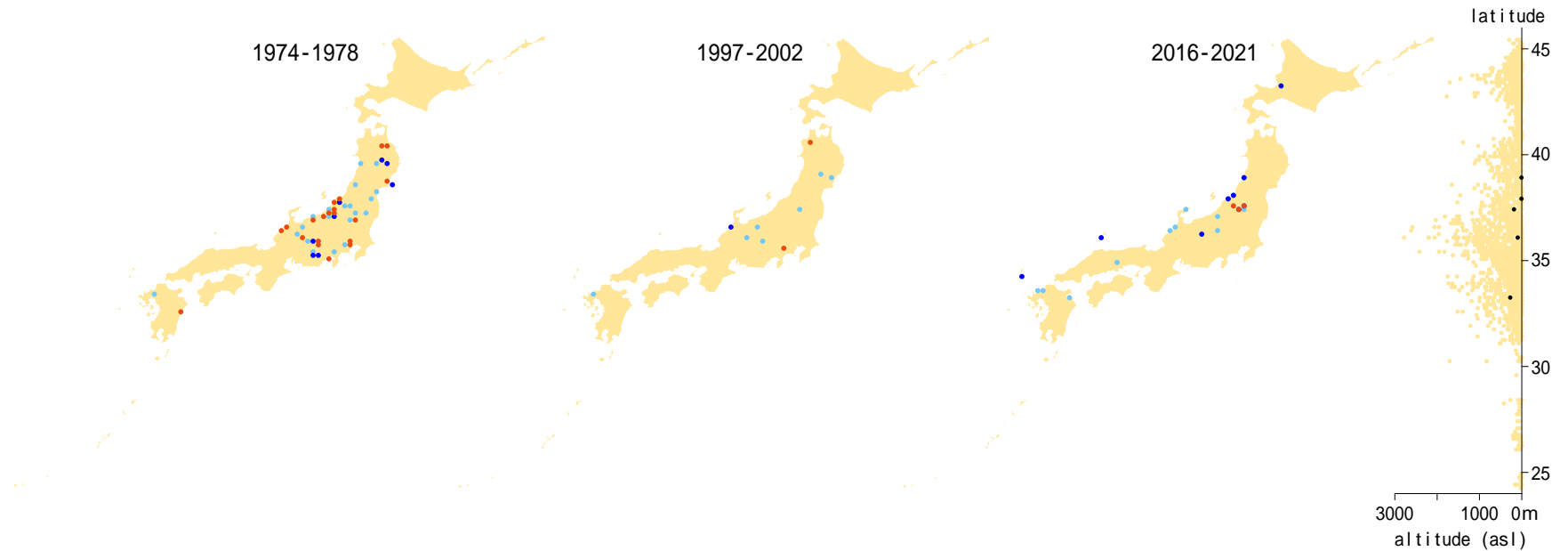
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	20	8	20
1997-2002	2	1	7
2016-2021	3	7	10

Recorded survey sites	
1997-2002	4
2016-2021	2



Altitudinal distribution
survey sites
recorded sites



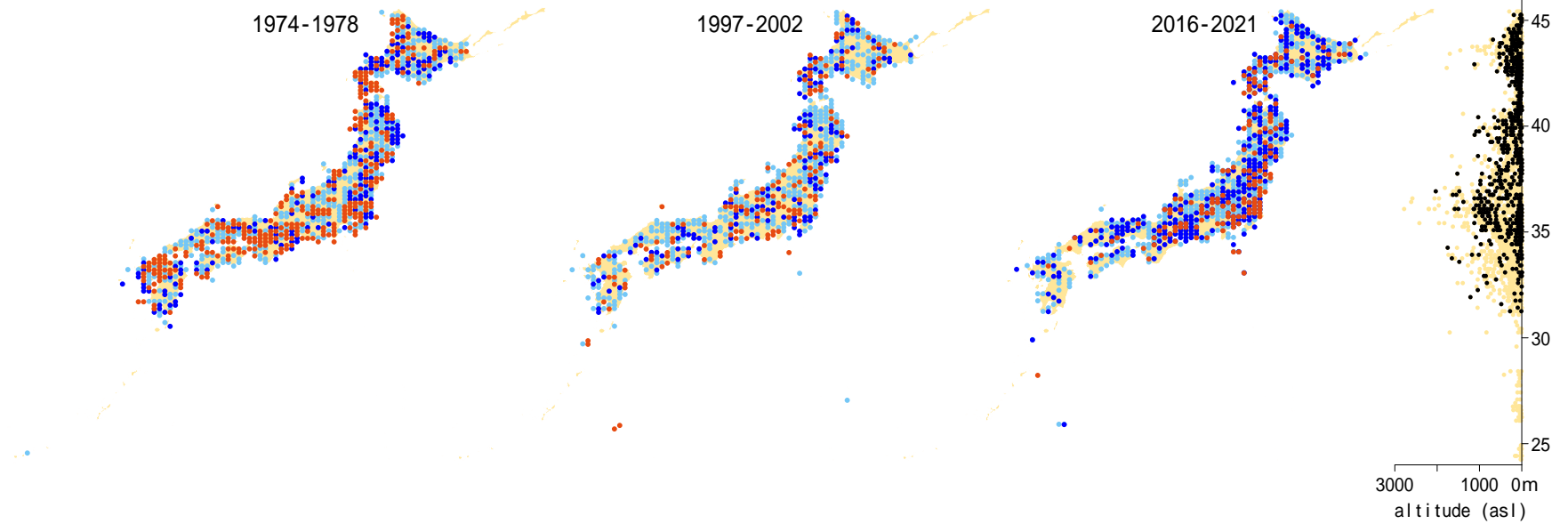
Bull-headed Shrike

Lanius bucephalus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	311	188	339
1997-2002	151	141	397
2016-2021	157	279	302

Recorded survey sites	
1997-2002	596
2016-2021	585



Brown Shrike

Lanius cristatus

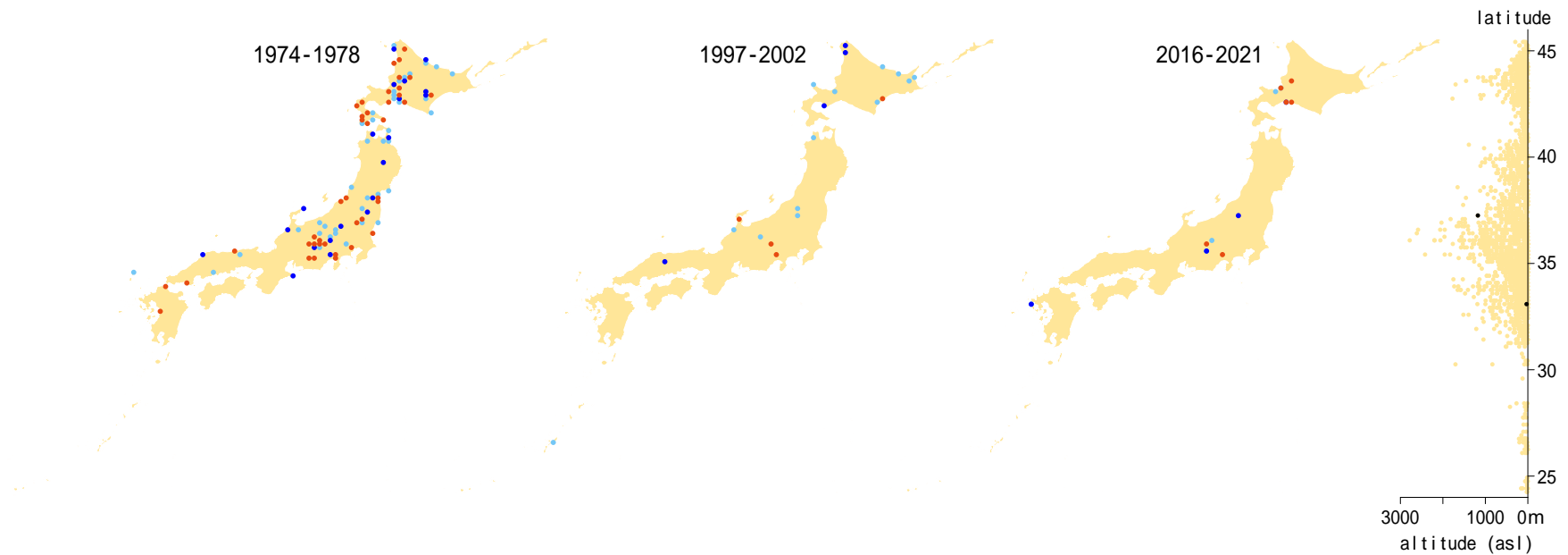
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	40	20	39
1997-2002	4	4	13
2016-2021	6	3	2

Recorded survey sites	
1997-2002	15
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



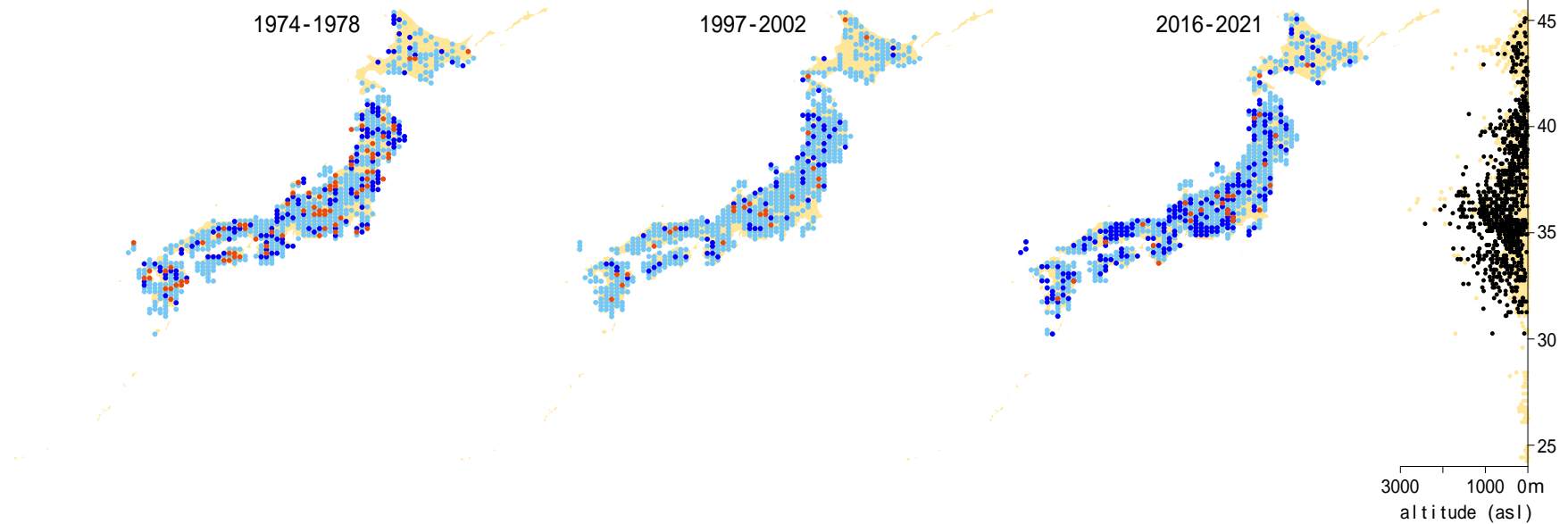
Eurasian Jay

Garrulus glandarius

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	79	145	501
1997-2002	24	69	628
2016-2021	26	211	490

Recorded survey sites	
1997-2002	867
2016-2021	766



Lidth's Jay

Garrulus lidthi

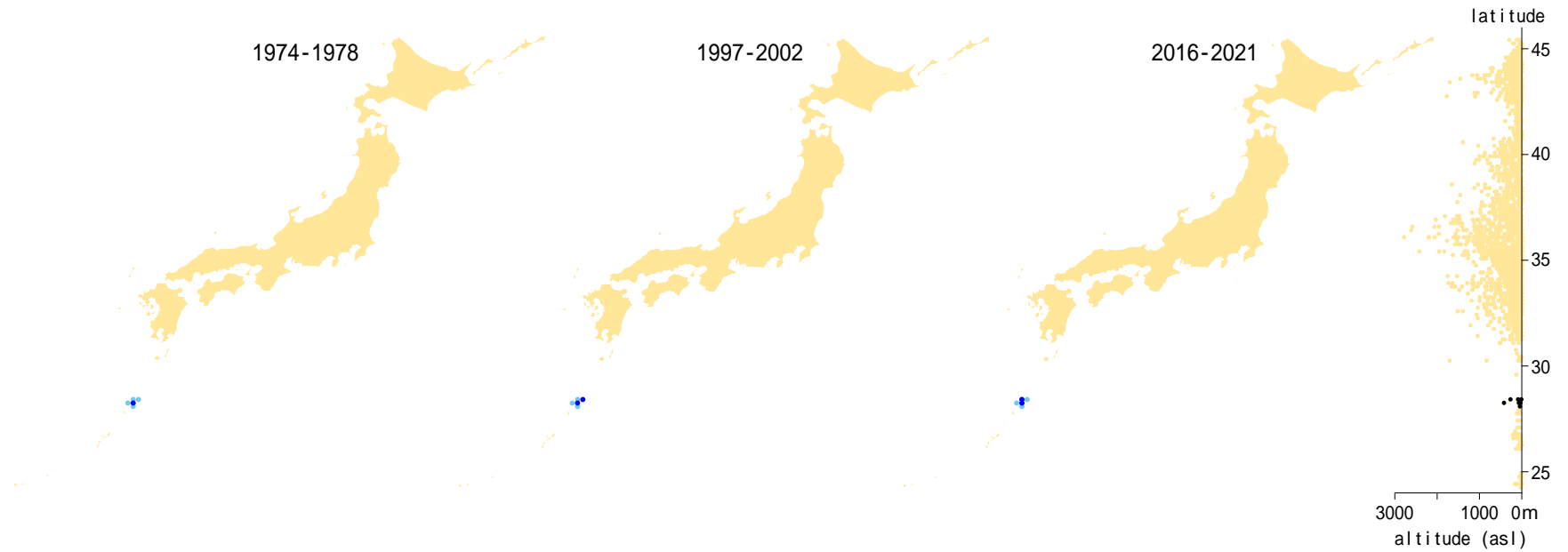
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	1	4
1997-2002	0	2	3
2016-2021	0	2	3

Recorded survey sites	
1997-2002	7
2016-2021	7



Altitudinal distribution
survey sites
recorded sites



Azure-winged Magpie

Cyanopica cyanus

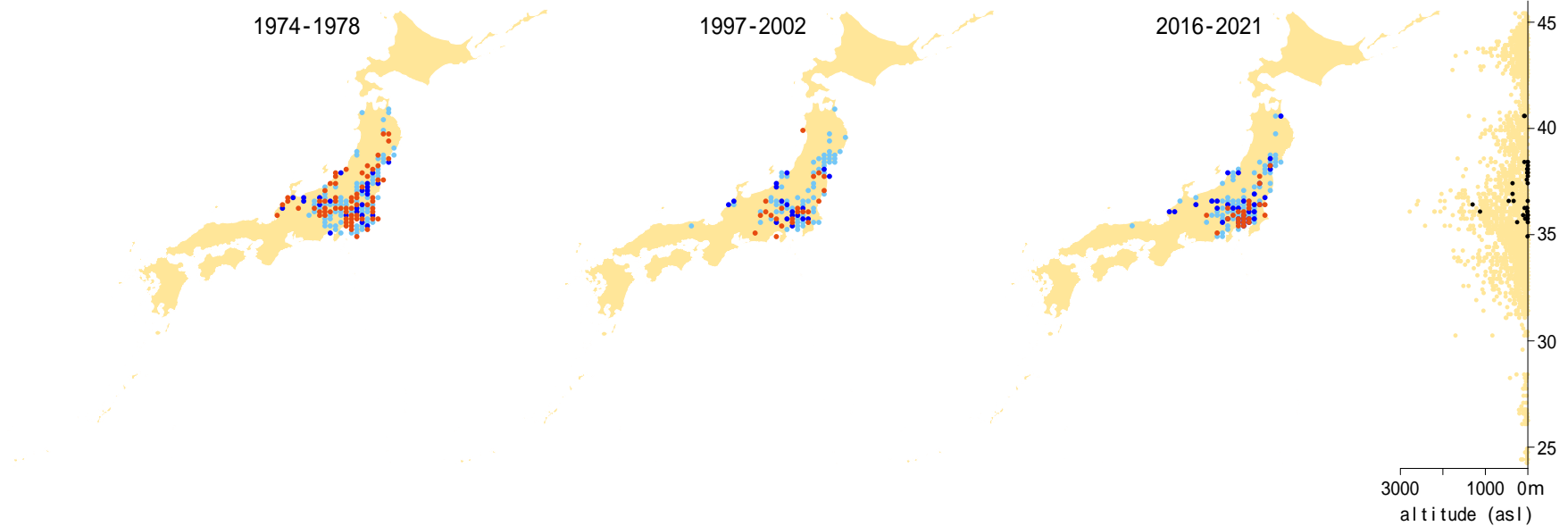
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	65	25	72
1997-2002	22	19	61
2016-2021	25	22	61

Recorded survey sites	
1997-2002	68
2016-2021	35



Altitudinal distribution
survey sites
recorded sites



Eurasian Magpie

Pica pica

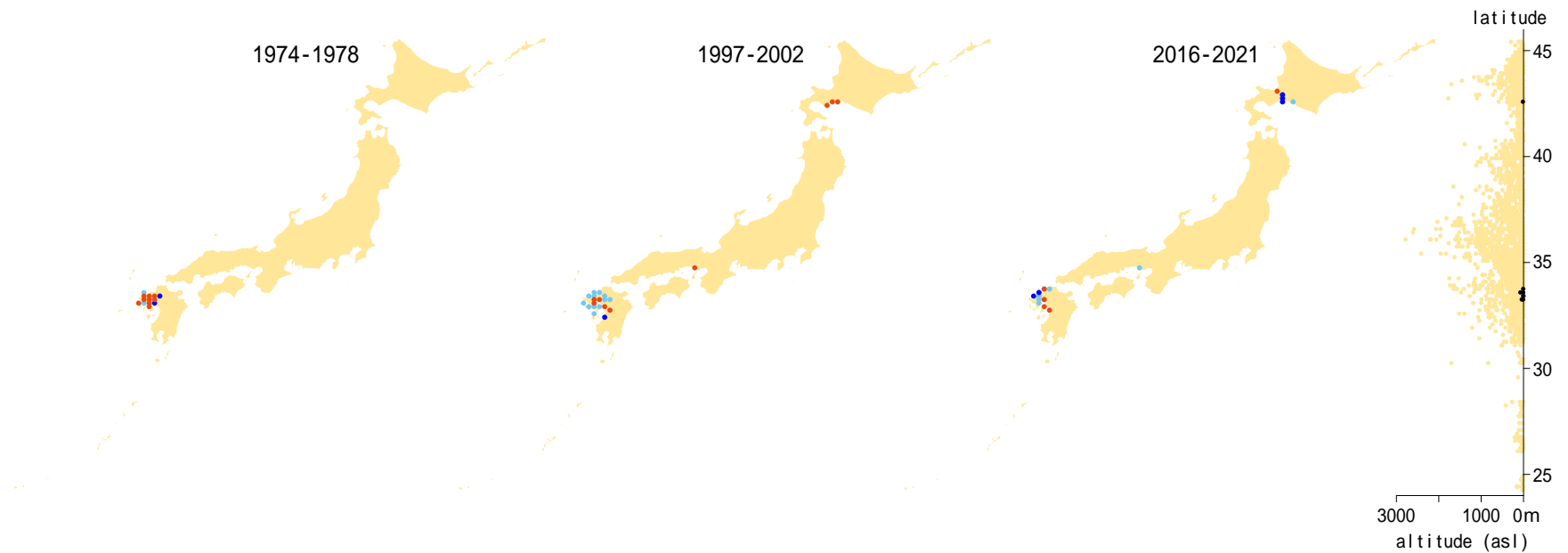
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	9	2	2
1997-2002	10	1	12
2016-2021	5	5	6

Recorded survey sites	
1997-2002	11
2016-2021	8



Altitudinal distribution
survey sites
recorded sites



Spotted Nutcracker

Nucifraga caryocatactes

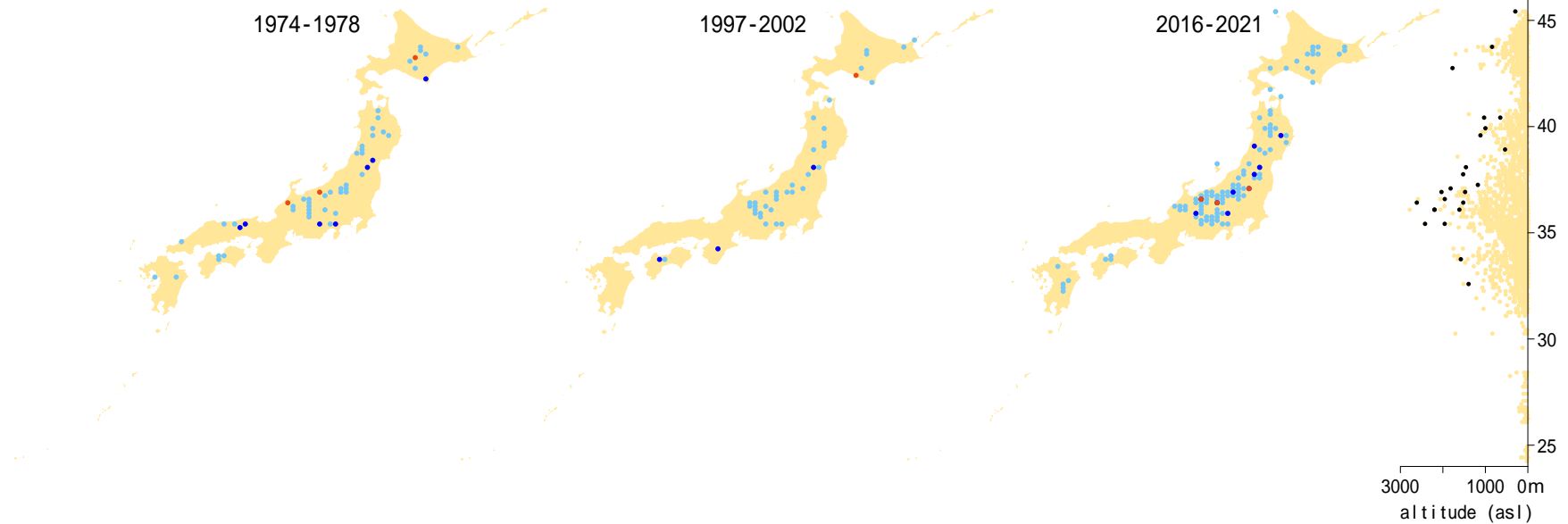
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	3	7	44
1997-2002	1	3	36
2016-2021	3	7	99

Recorded survey sites	
1997-2002	22
2016-2021	20



Altitudinal distribution
survey sites
recorded sites



Note: a special distribution survey targeting this species was conducted in the 2010s.

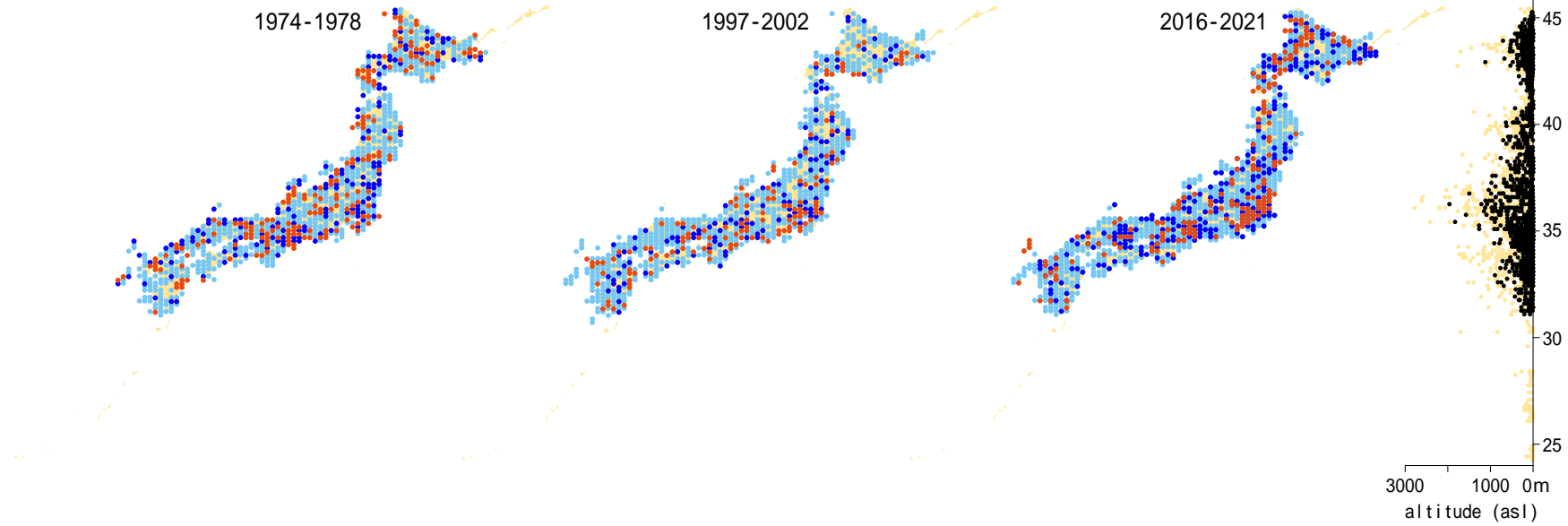
Carrion Crow

Corvus corone

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	193	159	580
1997-2002	136	129	656
2016-2021	187	227	589

Recorded survey sites	
1997-2002	1216
2016-2021	1125



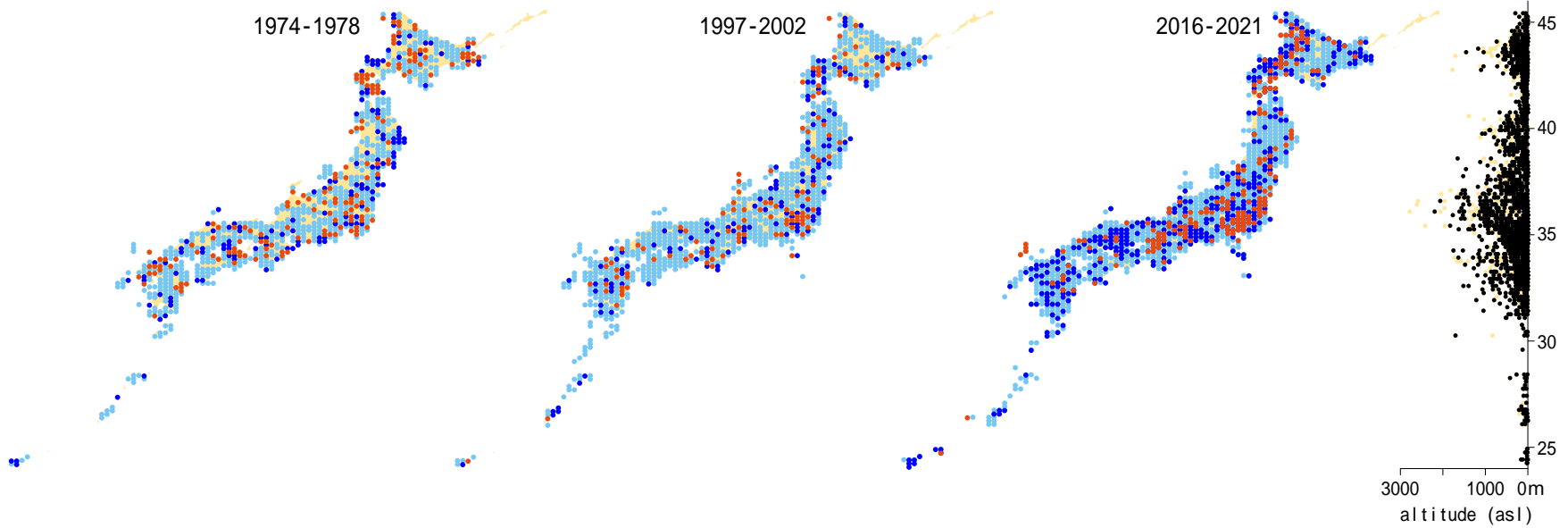
Large-billed Crow

Corvus macrorhynchos

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	157	138	592
1997-2002	111	141	790
2016-2021	190	328	648

Recorded survey sites	
1997-2002	1428
2016-2021	1584



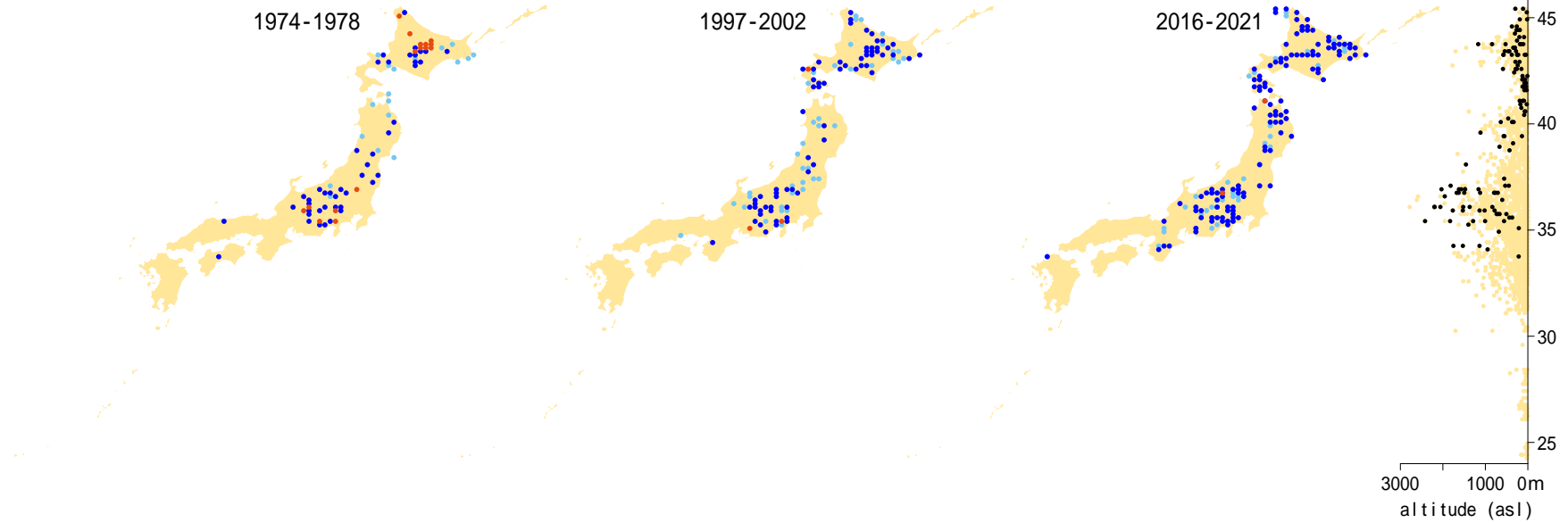
Goldcrest

Regulus regulus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	16	44	18
1997-2002	3	68	40
2016-2021	2	119	32

Recorded survey sites	
1997-2002	88
2016-2021	101



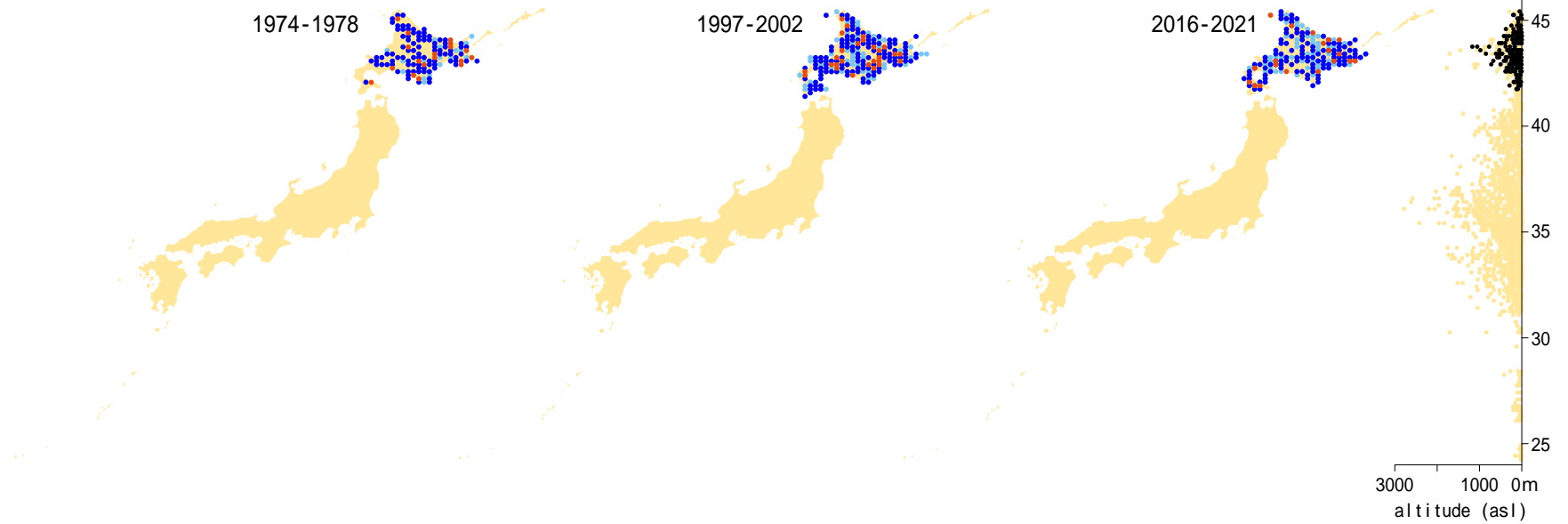
Marsh Tit

Poecile palustris

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	18	91	17
1997-2002	27	121	46
2016-2021	19	106	46

Recorded survey sites	
1997-2002	225
2016-2021	161



Willow Tit

Poecile montanus

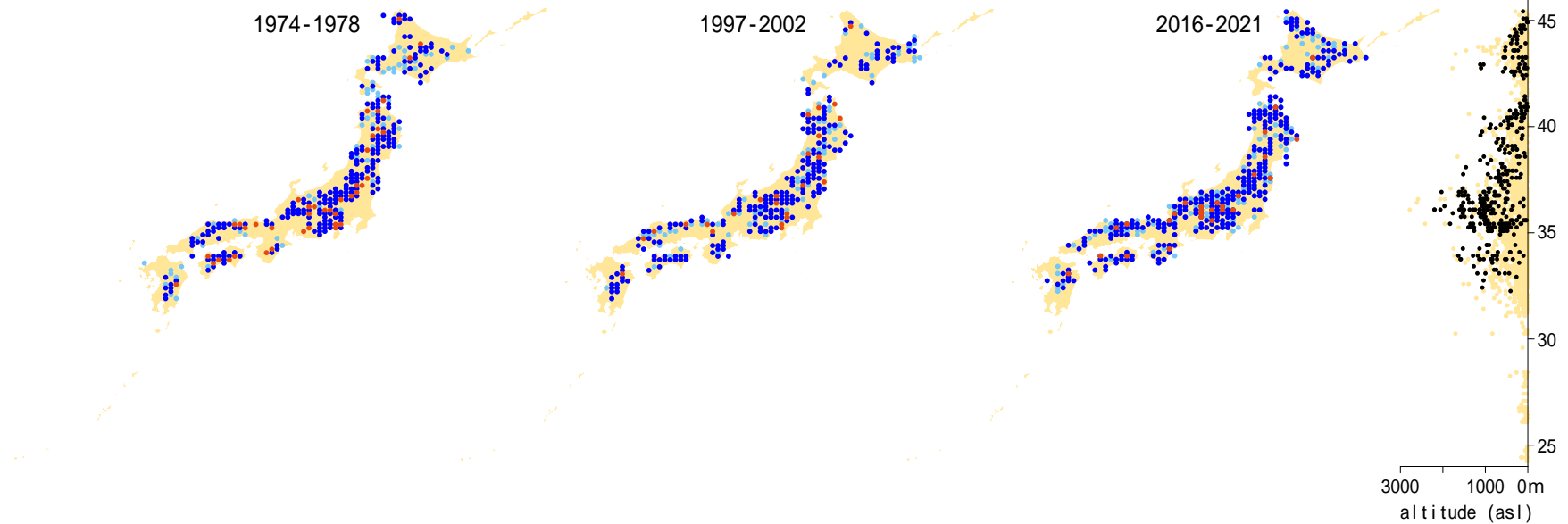
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	41	229	60
1997-2002	24	213	71
2016-2021	27	282	87

Recorded survey sites	
1997-2002	263
2016-2021	303



Altitudinal distribution
survey sites
recorded sites



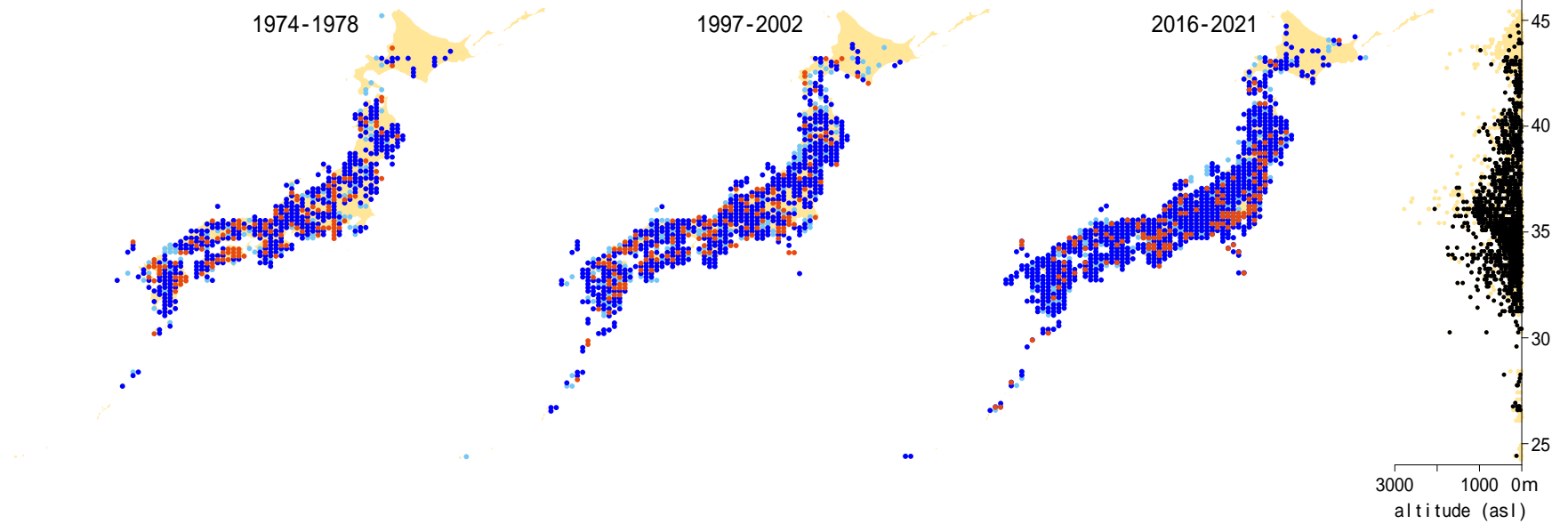
Varied Tit

Poecile varius

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	124	407	75
1997-2002	134	544	122
2016-2021	141	695	83

Recorded survey sites	
1997-2002	932
2016-2021	1111



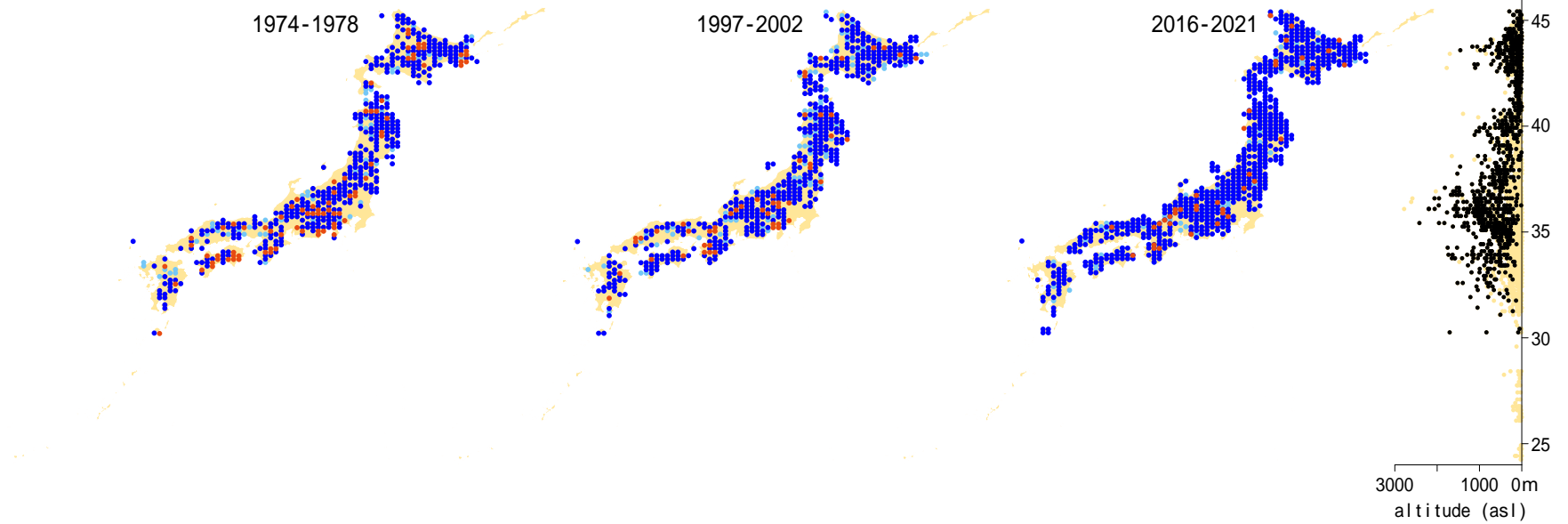
Coal Tit

Periparus ater

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	83	408	56
1997-2002	51	476	78
2016-2021	38	651	39

Recorded survey sites	
1997-2002	673
2016-2021	808



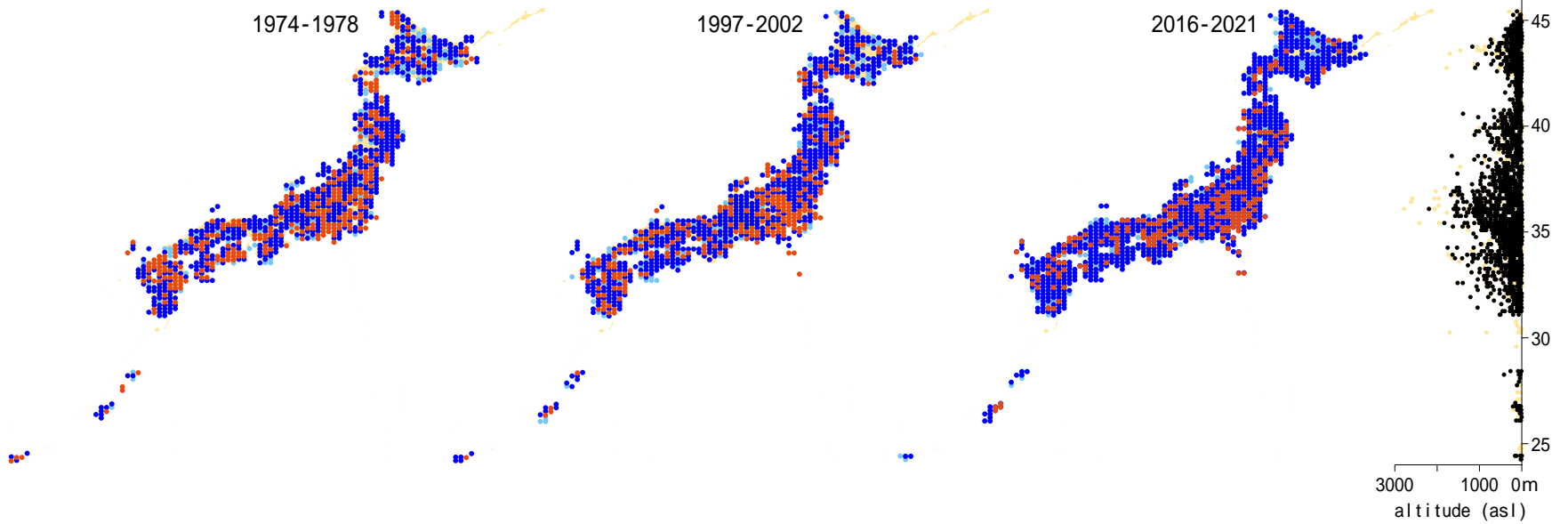
Japanese Tit

Parus minor

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	305	602	88
1997-2002	278	681	96
2016-2021	245	811	61

Recorded survey sites	
1997-2002	1462
2016-2021	1584



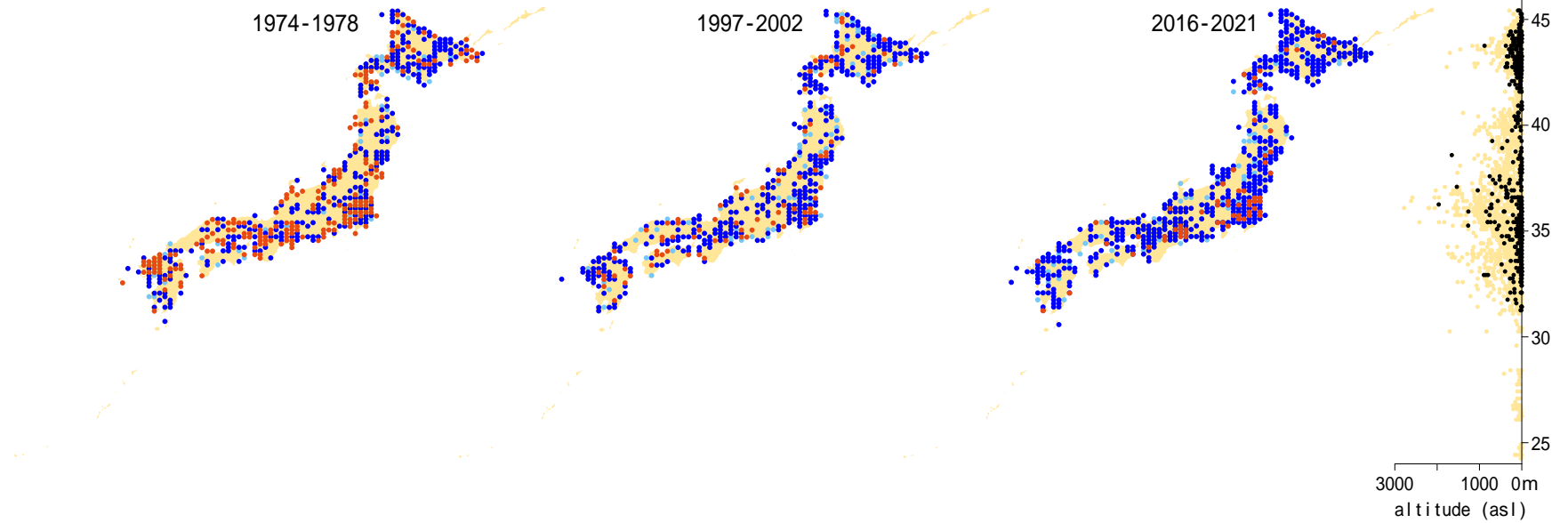
Eurasian Skylark

Alauda arvensis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	210	289	35
1997-2002	85	348	60
2016-2021	64	460	52

Recorded survey sites	
1997-2002	451
2016-2021	451



Sand Martin

Riparia riparia

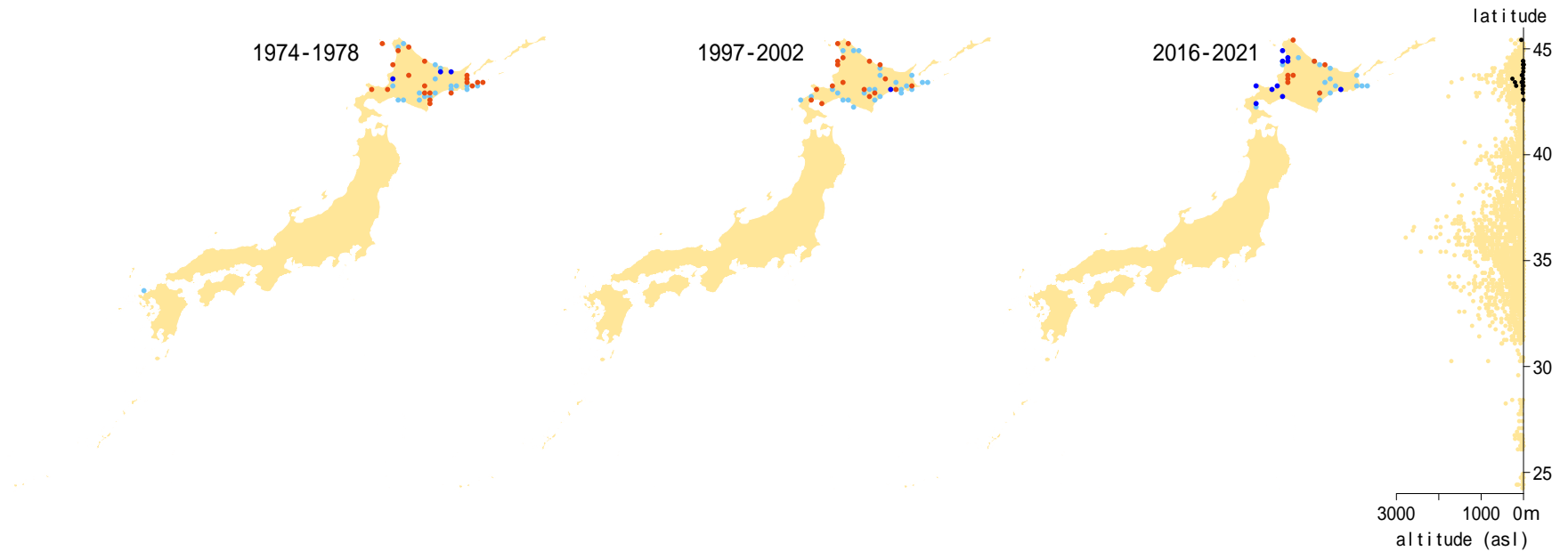
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	20	3	20
1997-2002	19	1	25
2016-2021	8	10	14

Recorded survey sites	
1997-2002	35
2016-2021	17



Altitudinal distribution
survey sites
recorded sites



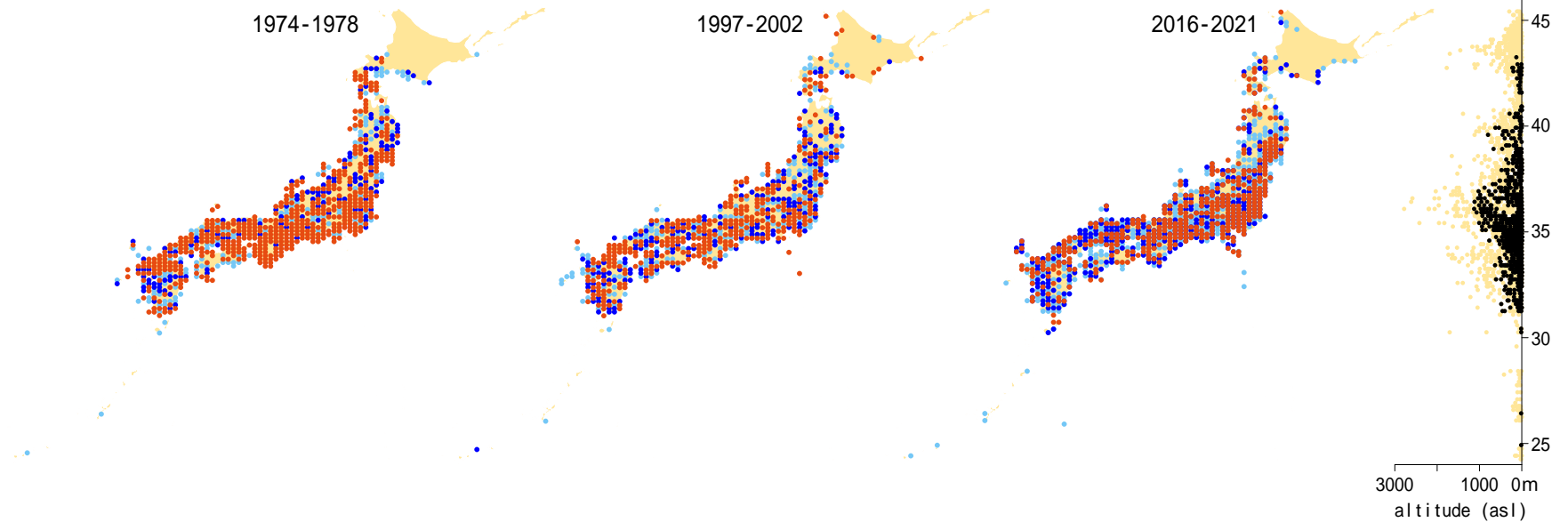
Barn Swallow

Hirundo rustica

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	509	135	136
1997-2002	362	185	175
2016-2021	413	184	212

Recorded survey sites	
1997-2002	934
2016-2021	833



Pacific Swallow

Hirundo tahitica

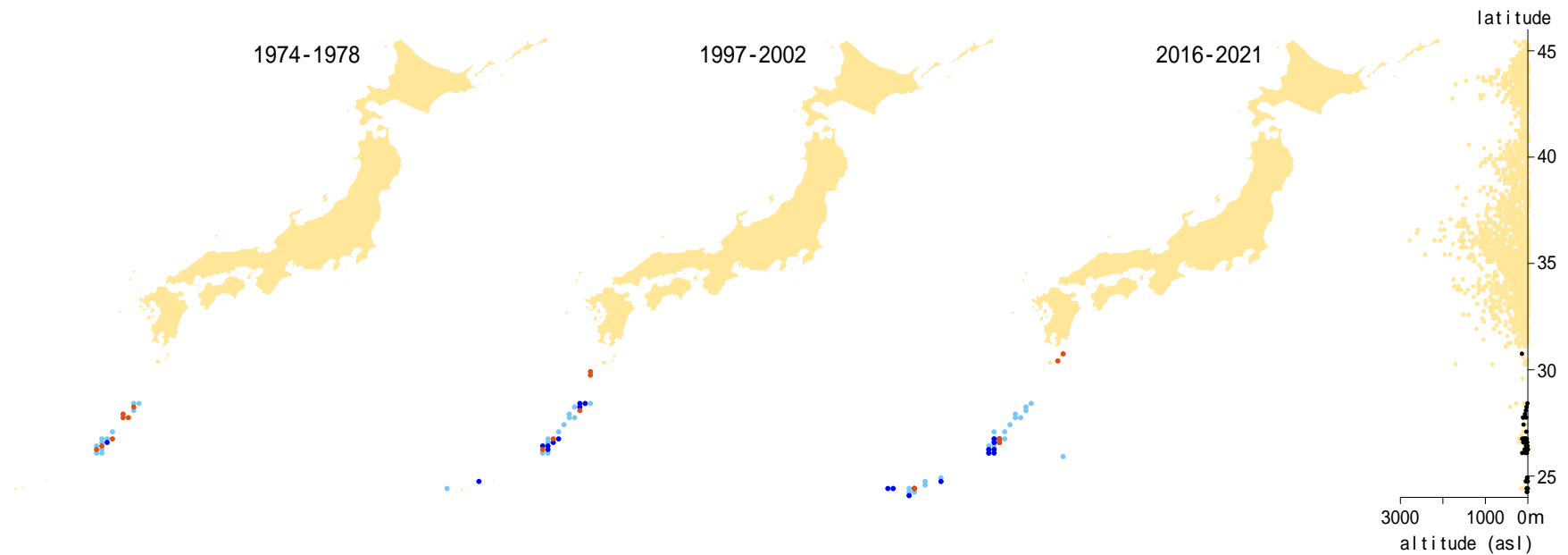
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	7	1	11
1997-2002	5	9	12
2016-2021	5	10	19

Recorded survey sites	
1997-2002	44
2016-2021	46



Altitudinal distribution
survey sites
recorded sites



Red-rumped Swallow

Hirundo daurica

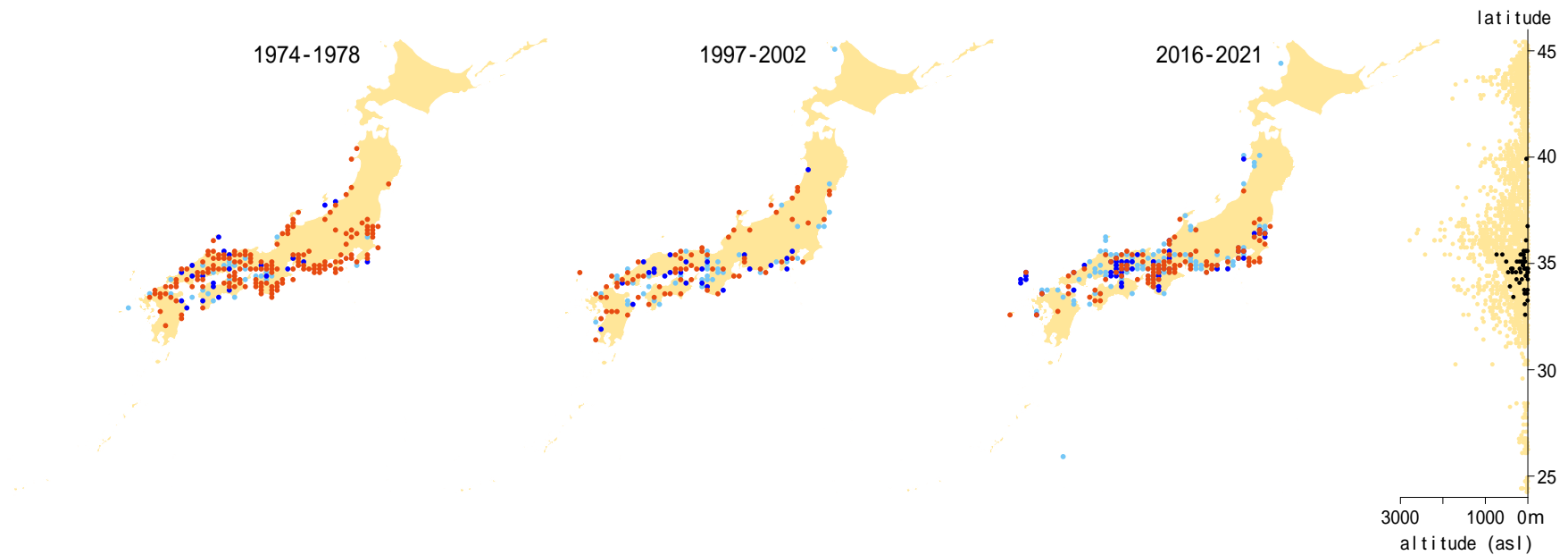
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	164	23	27
1997-2002	71	25	41
2016-2021	97	32	72

Recorded survey sites	
1997-2002	70
2016-2021	46



Altitudinal distribution
survey sites
recorded sites



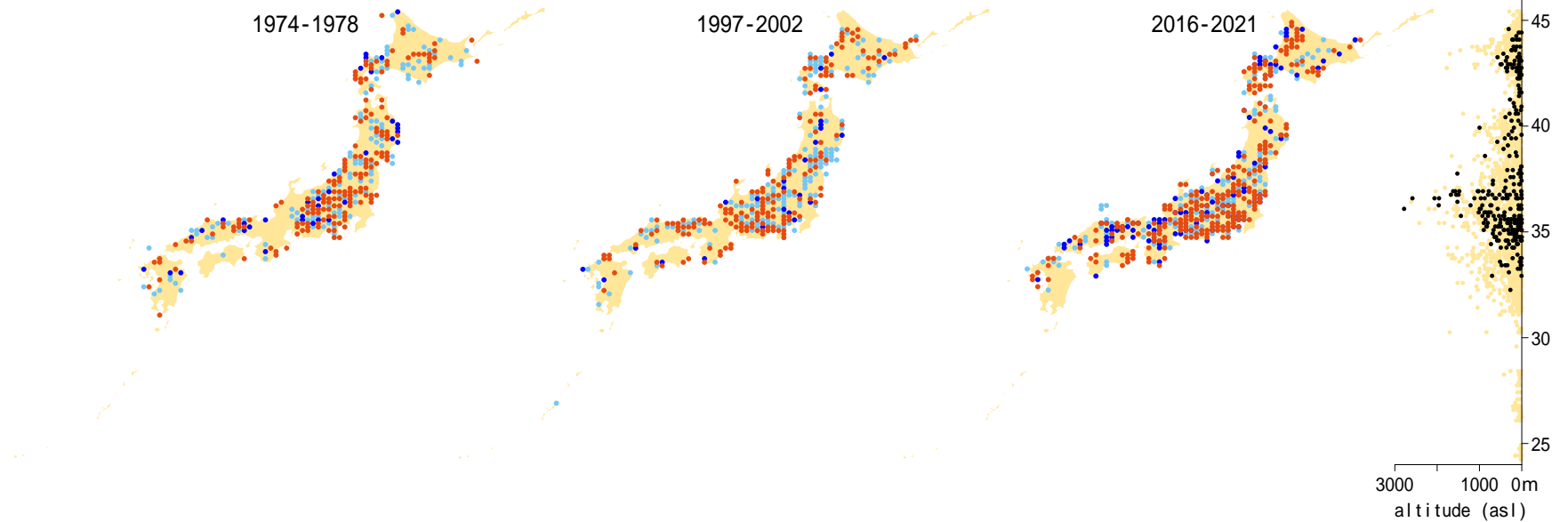
Asian House Martin

Delichon dasypus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	170	35	116
1997-2002	176	25	152
2016-2021	263	66	108

Recorded survey sites	
1997-2002	328
2016-2021	246



Note: a special distribution survey targeting this species was conducted in the 2010s.

Light-vented Bulbul

Pycnonotus sinensis

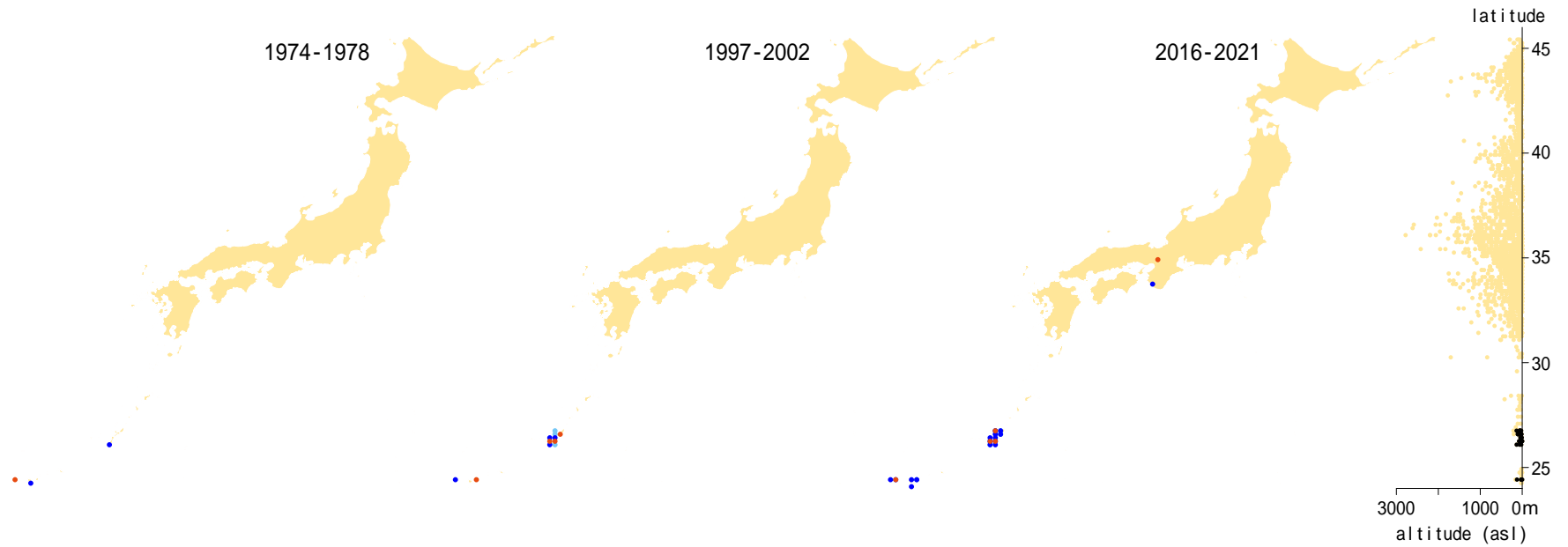
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	2	0
1997-2002	4	4	3
2016-2021	5	12	0

Recorded survey sites	
1997-2002	22
2016-2021	29



Altitudinal distribution
survey sites
recorded sites



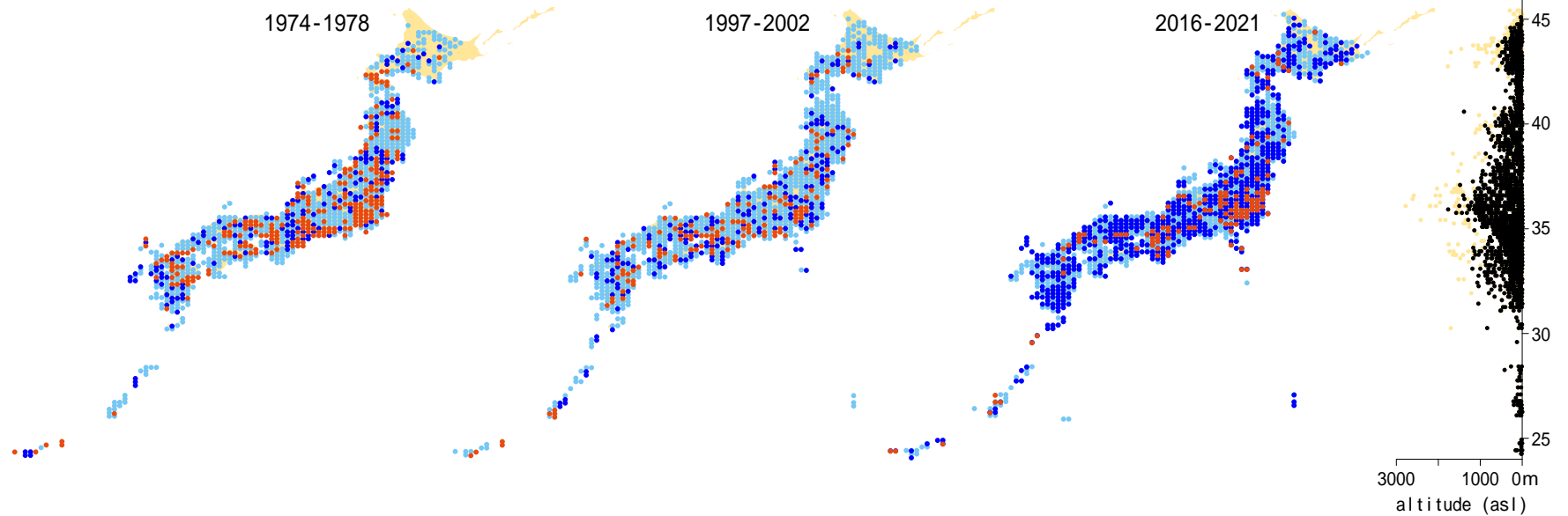
Brown-eared Bulbul

Hypsipetes amaurotis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	241	168	591
1997-2002	151	190	771
2016-2021	129	579	440

Recorded survey sites	
1997-2002	1627
2016-2021	1703



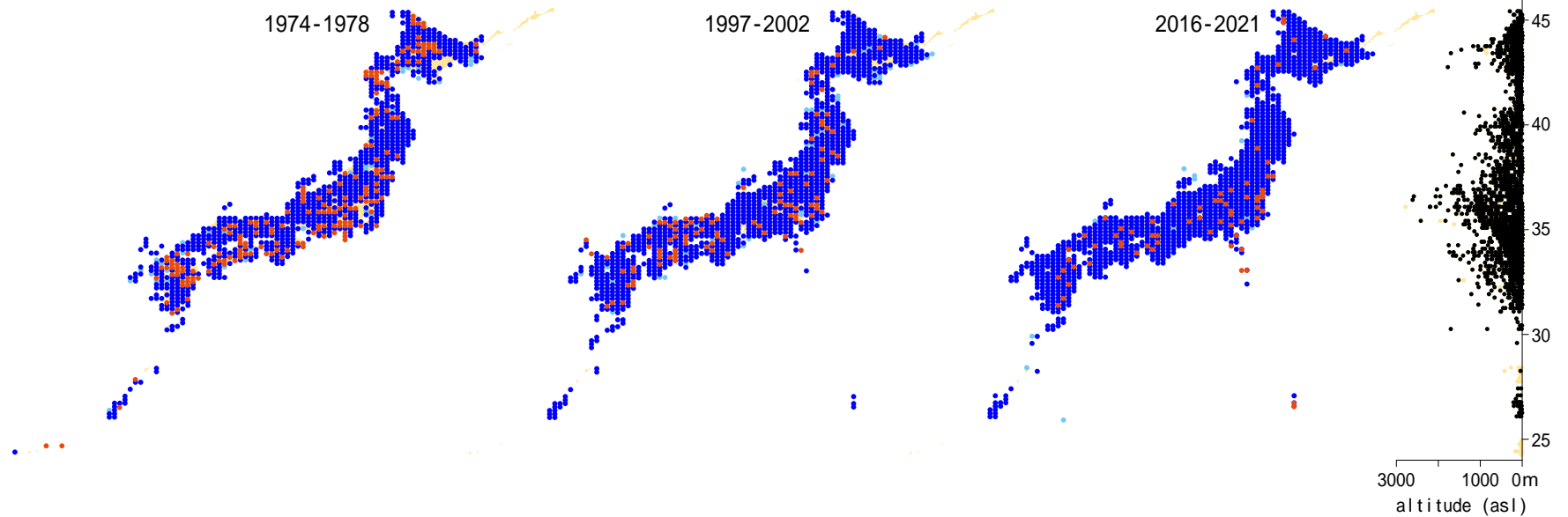
Japanese Bush Warbler

Cettia diphone

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	187	841	34
1997-2002	101	1010	48
2016-2021	70	1098	13

Recorded survey sites	
1997-2002	1746
2016-2021	1786



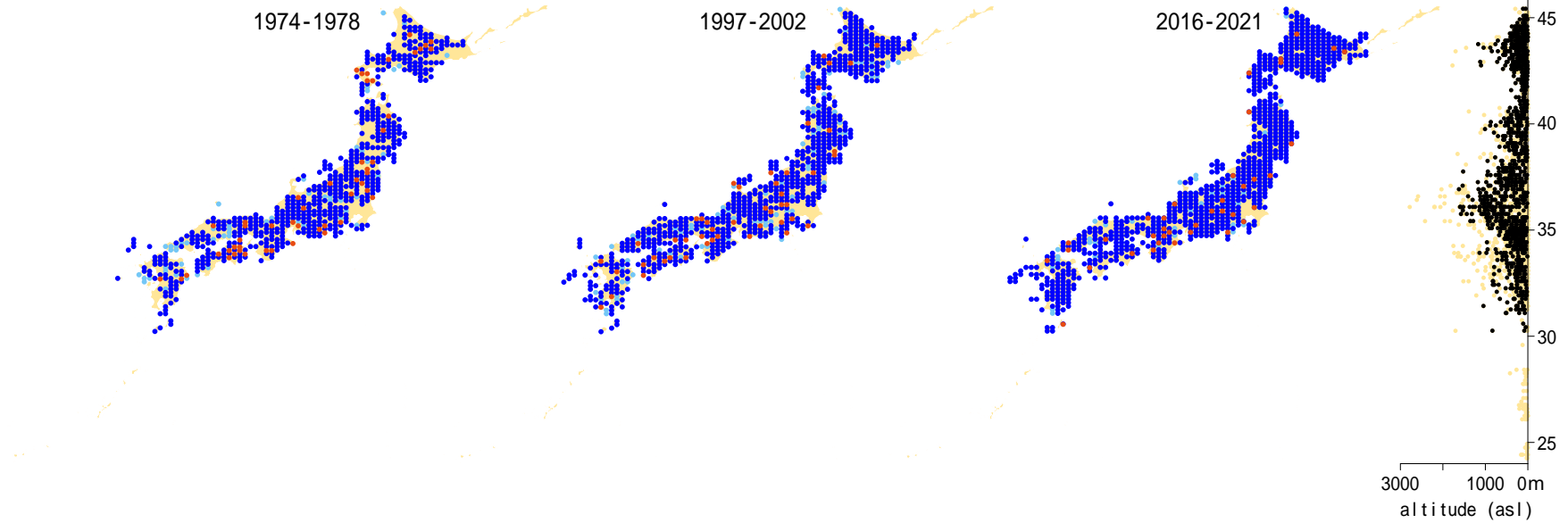
Asian Stubtail

Urosphena squameiceps

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	51	572	53
1997-2002	48	700	77
2016-2021	38	808	33

Recorded survey sites	
1997-2002	931
2016-2021	909



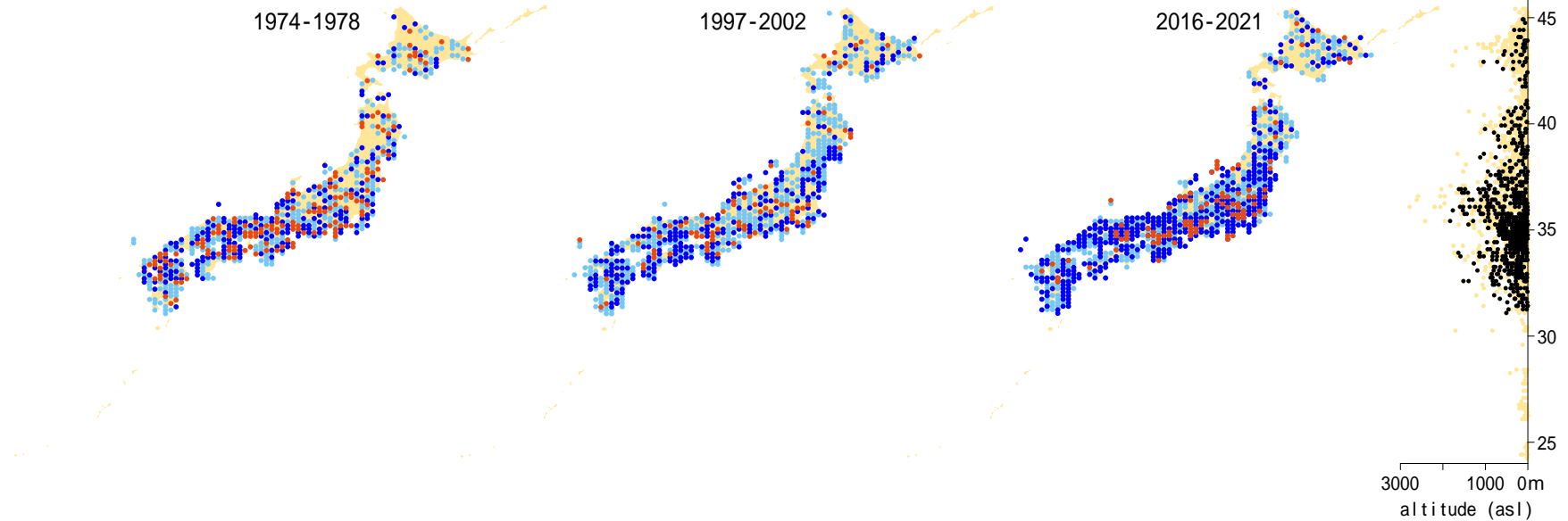
Long-tailed Tit

Aegithalos caudatus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	150	205	283
1997-2002	82	249	391
2016-2021	93	384	298

Recorded survey sites	
1997-2002	682
2016-2021	652



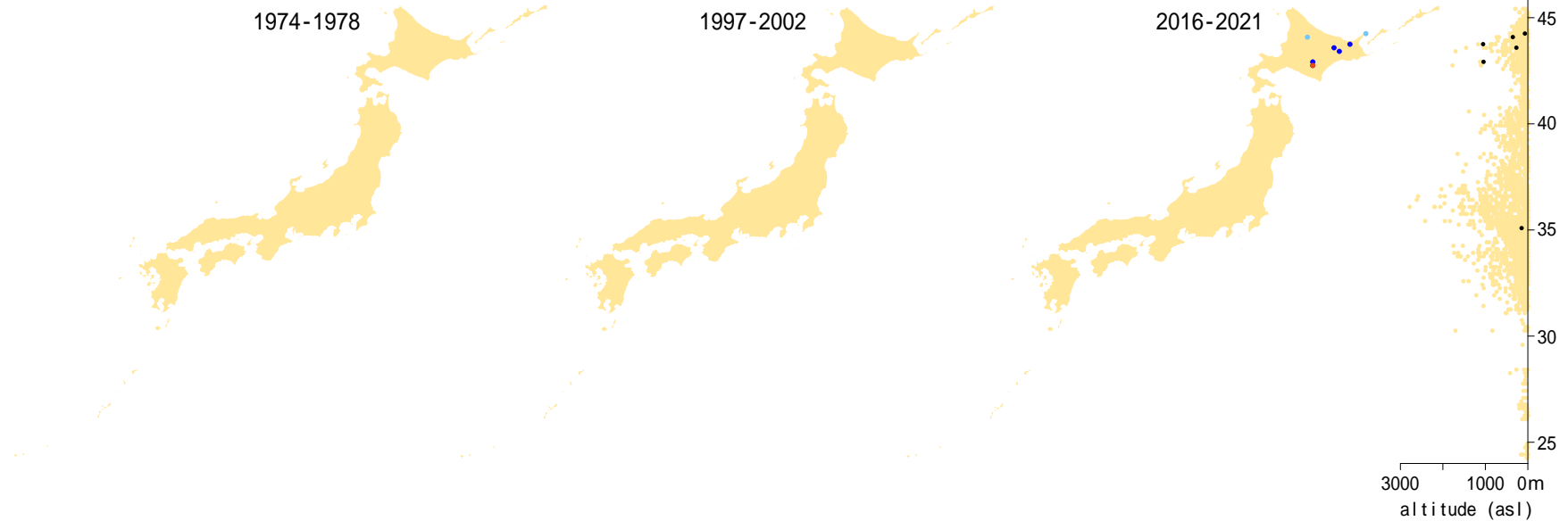
Kamchatka Leaf Warbler

Phylloscopus examinandus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	4	2

Recorded survey sites	
1997-2002	0
2016-2021	0



Japanese Leaf Warbler

Phylloscopus xanthodryas

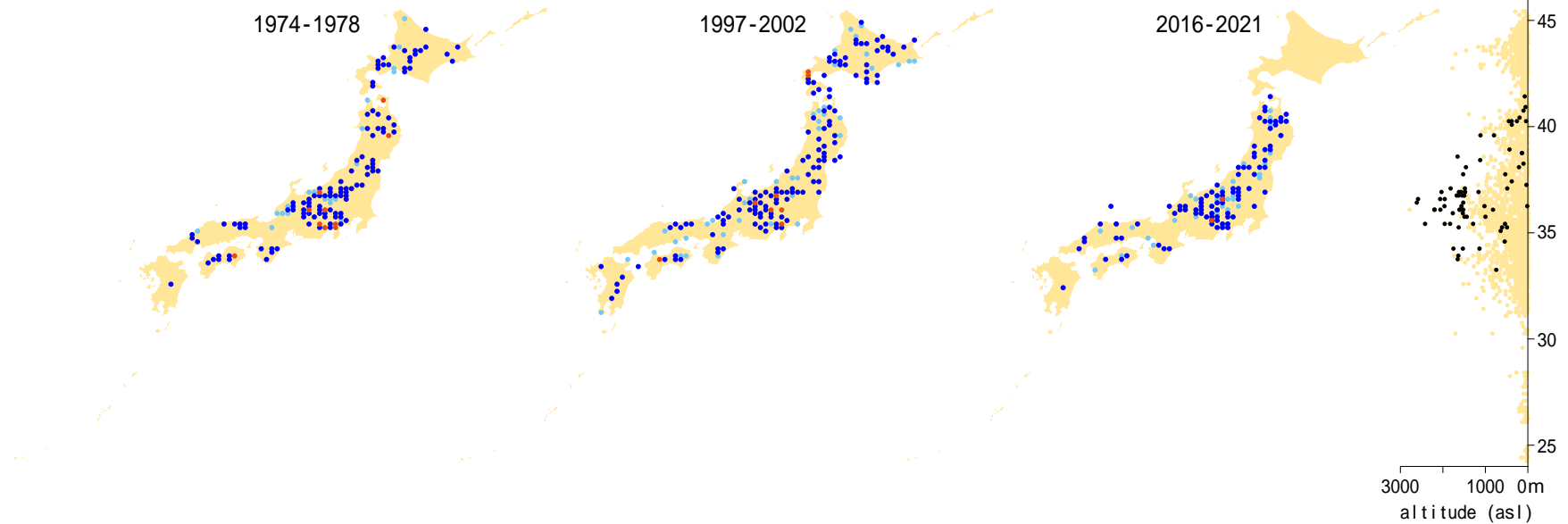
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	10	113	20
1997-2002	8	129	40
2016-2021	2	90	28

Recorded survey sites	
1997-2002	179
2016-2021	86



Altitudinal distribution
survey sites
recorded sites



Sakhalin Leaf Warbler

Phylloscopus borealoides

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats

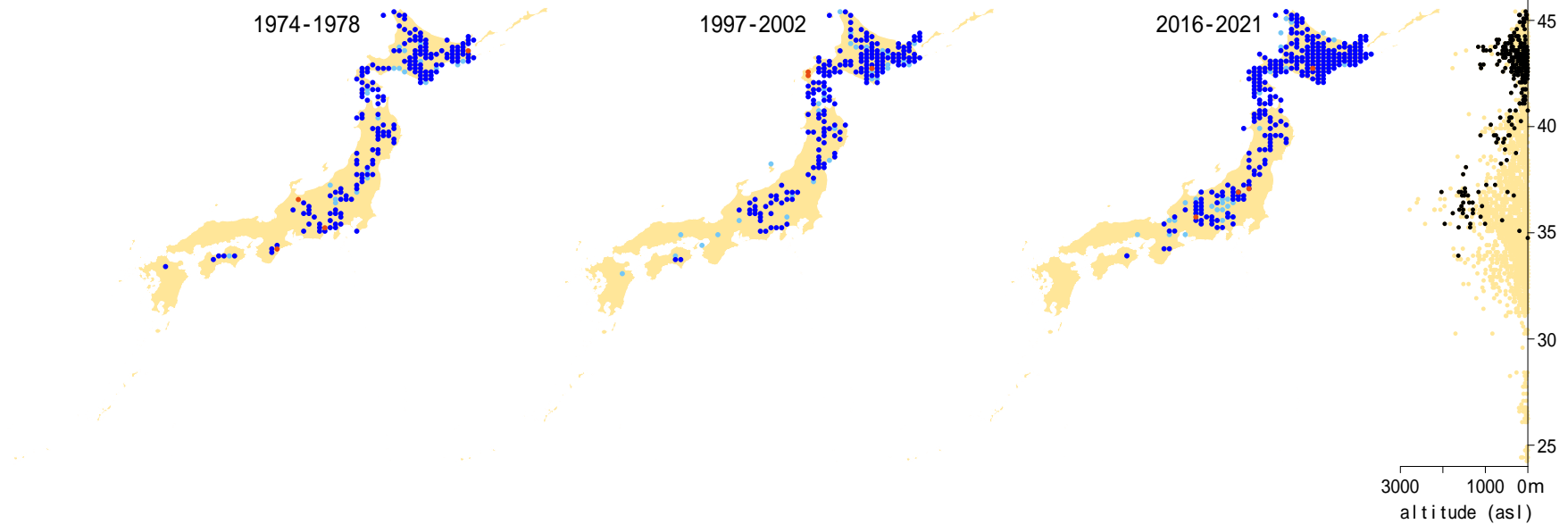
	A	B	C
1974-1978	4	181	21
1997-2002	3	185	31
2016-2021	4	265	27

Recorded survey sites

1997-2002	196
2016-2021	267



Altitudinal distribution survey sites recorded sites



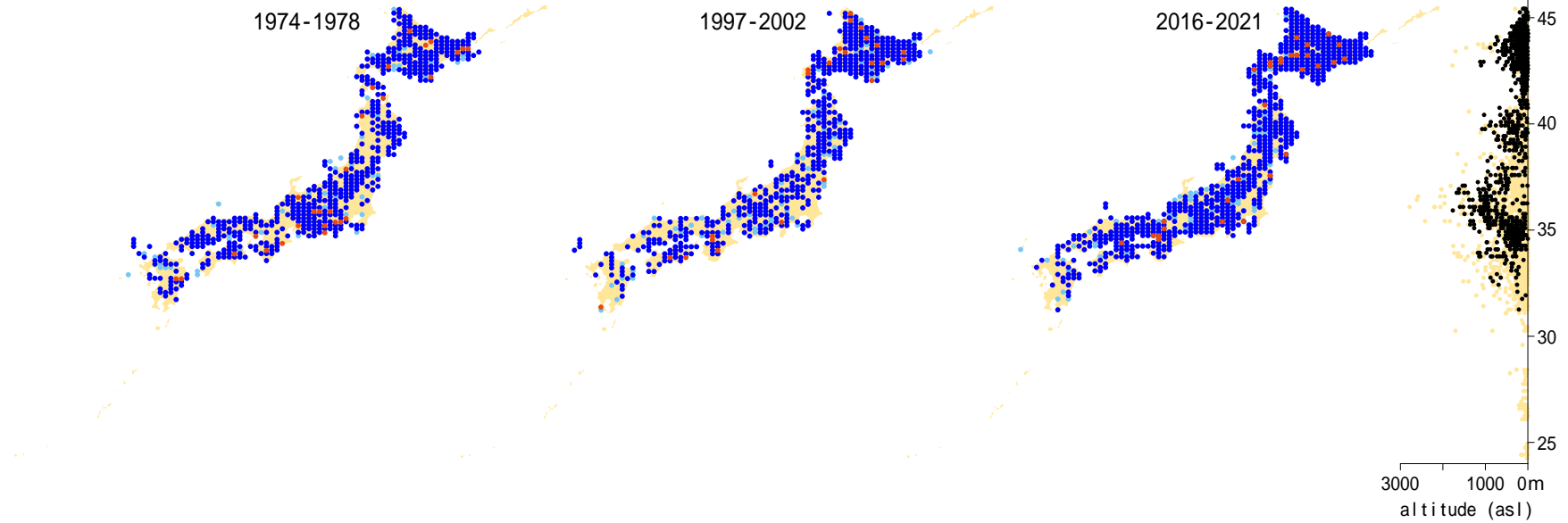
Eastern Crowned Warbler

Phylloscopus coronatus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	28	558	46
1997-2002	24	507	63
2016-2021	29	668	52

Recorded survey sites	
1997-2002	625
2016-2021	757



Ijima's Leaf Warbler

Phylloscopus ijimae

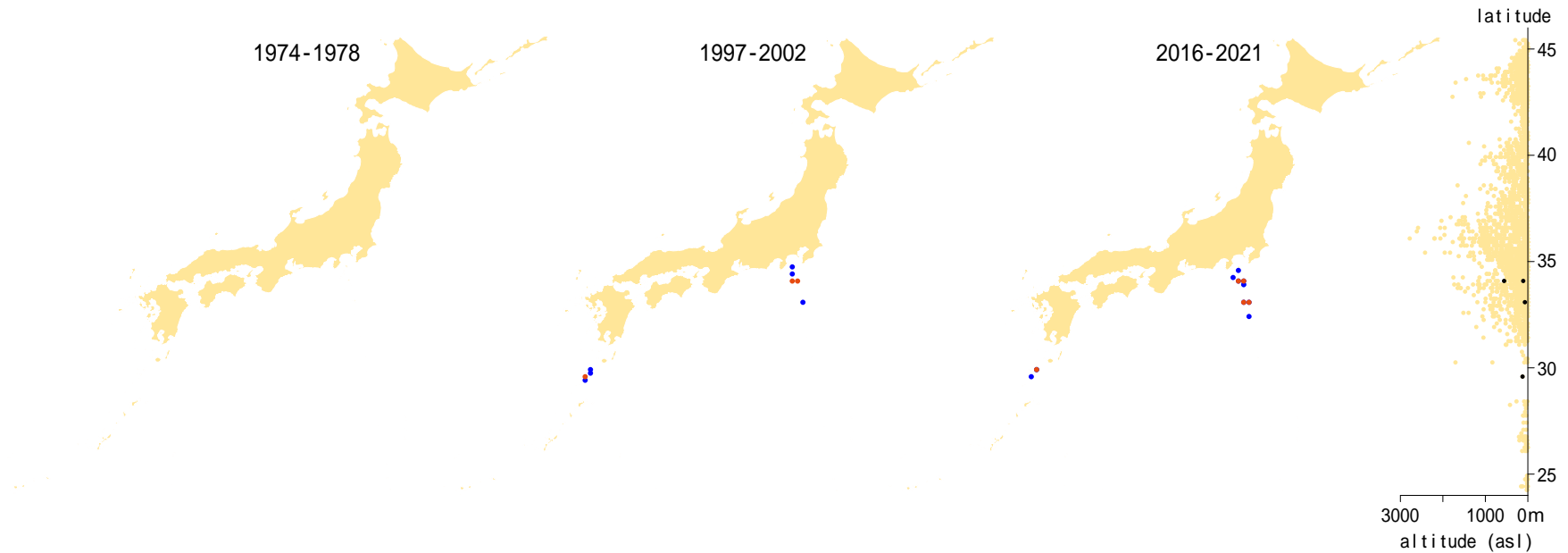
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	3	6	0
2016-2021	5	5	0

Recorded survey sites	
1997-2002	4
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



Bonin White-eye

Apalopteron familiare

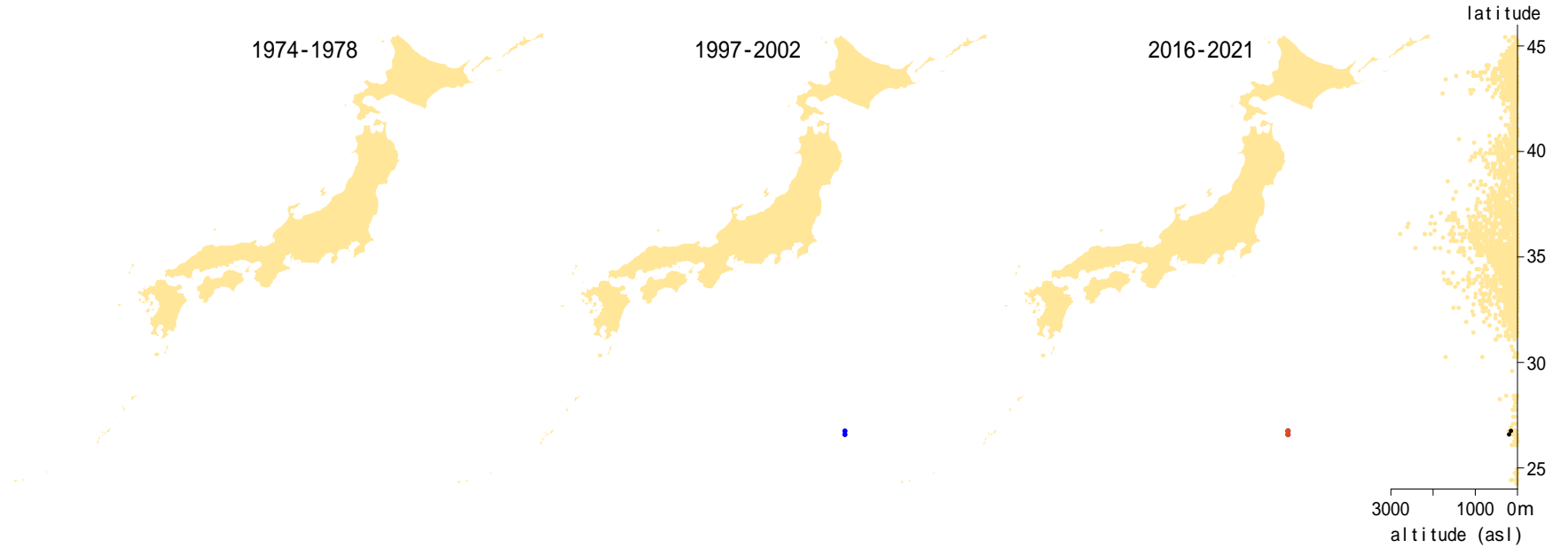
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	2	0
2016-2021	2	0	0

Recorded survey sites	
1997-2002	2
2016-2021	2



Altitudinal distribution
survey sites
recorded sites



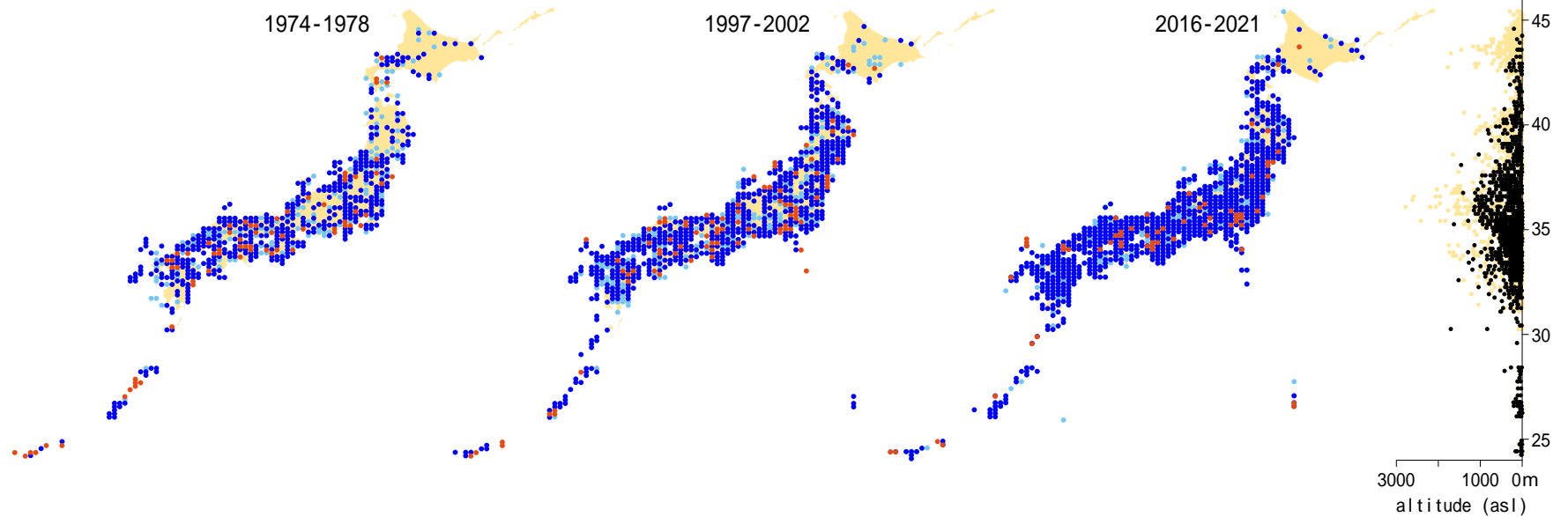
Warbling White-eye

Zosterops japonicus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	69	452	122
1997-2002	86	606	149
2016-2021	64	768	81

	Recorded survey sites
1997-2002	966
2016-2021	1024



Lanceolated Warbler

Locustella lanceolata

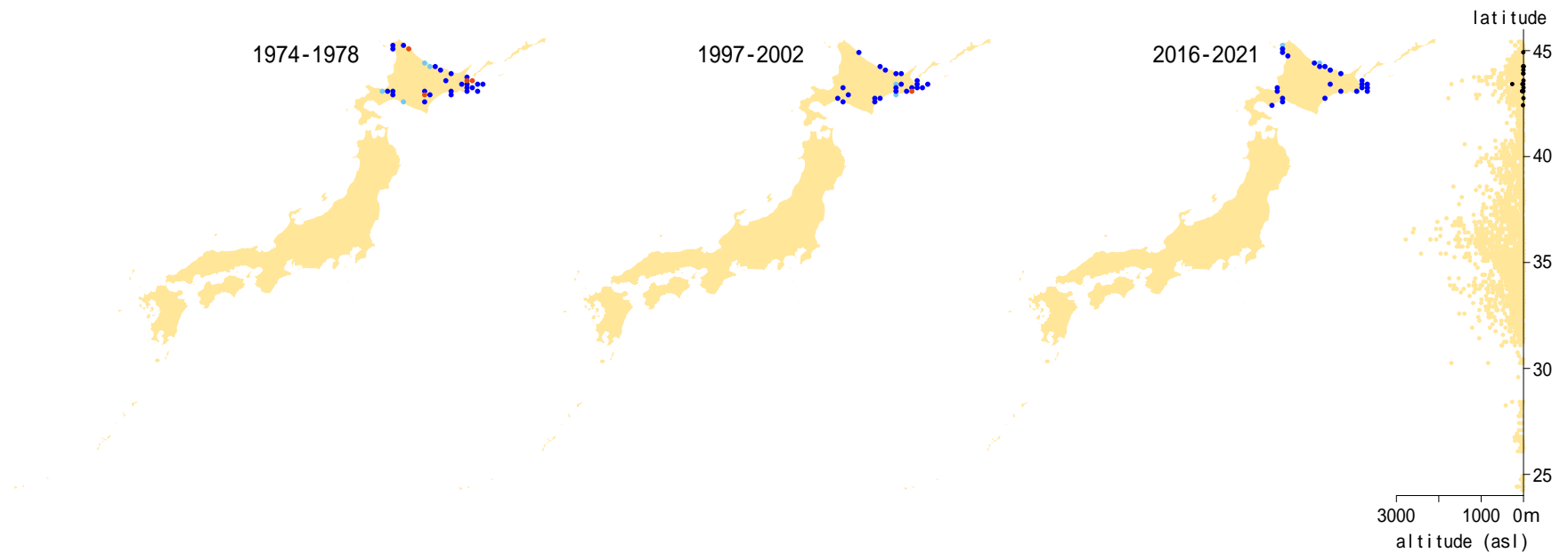
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	4	24	4
1997-2002	1	22	2
2016-2021	0	23	2

Recorded survey sites	
1997-2002	13
2016-2021	13



Altitudinal distribution
survey sites
recorded sites



Middendorff's Grasshopper Warbler

Locustella ochotensis

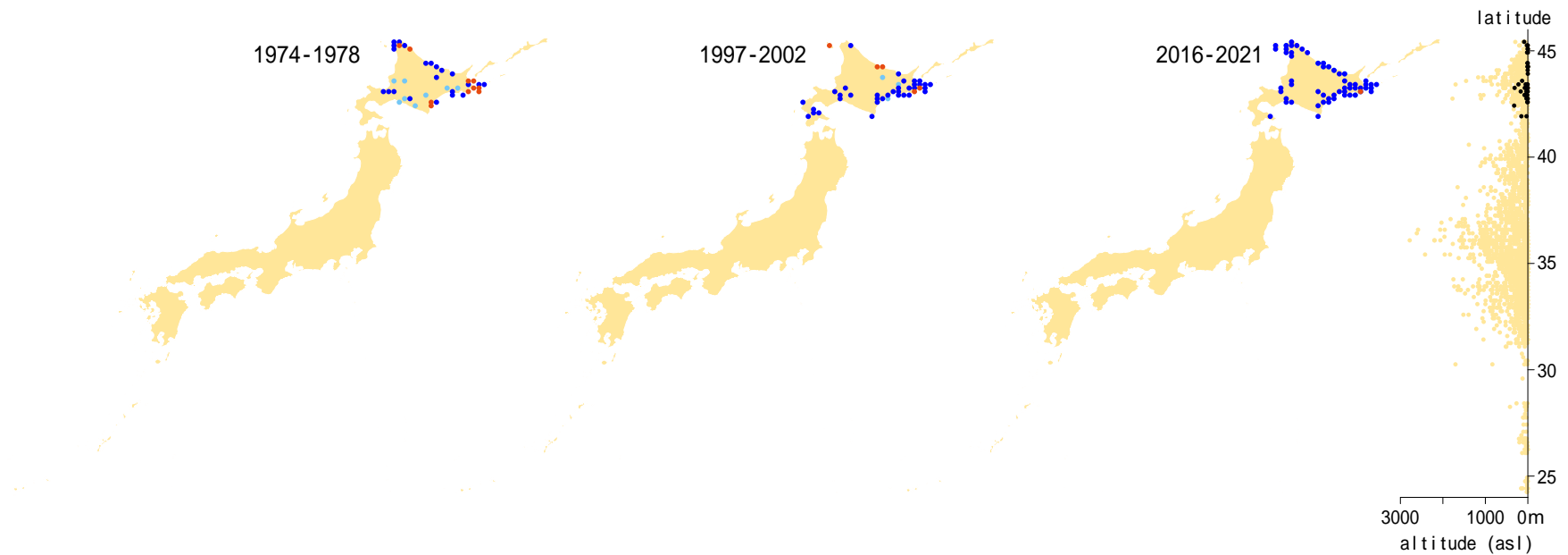
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	10	22	8
1997-2002	5	35	3
2016-2021	1	55	0

Recorded survey sites	
1997-2002	31
2016-2021	34



Altitudinal distribution
survey sites
recorded sites



Styan's Grasshopper Warbler

Locustella pleskei

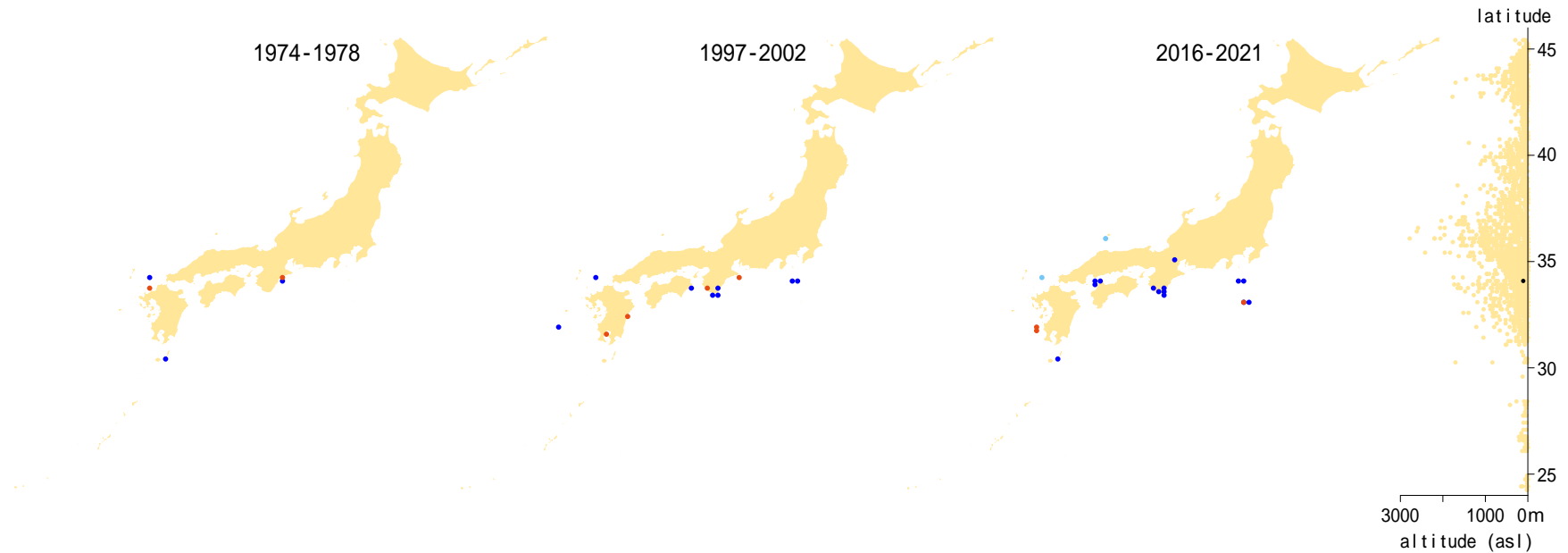
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	3	0
1997-2002	4	8	0
2016-2021	3	13	2

Recorded survey sites	
1997-2002	3
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



Marsh Grassbird

Locustella pryeri

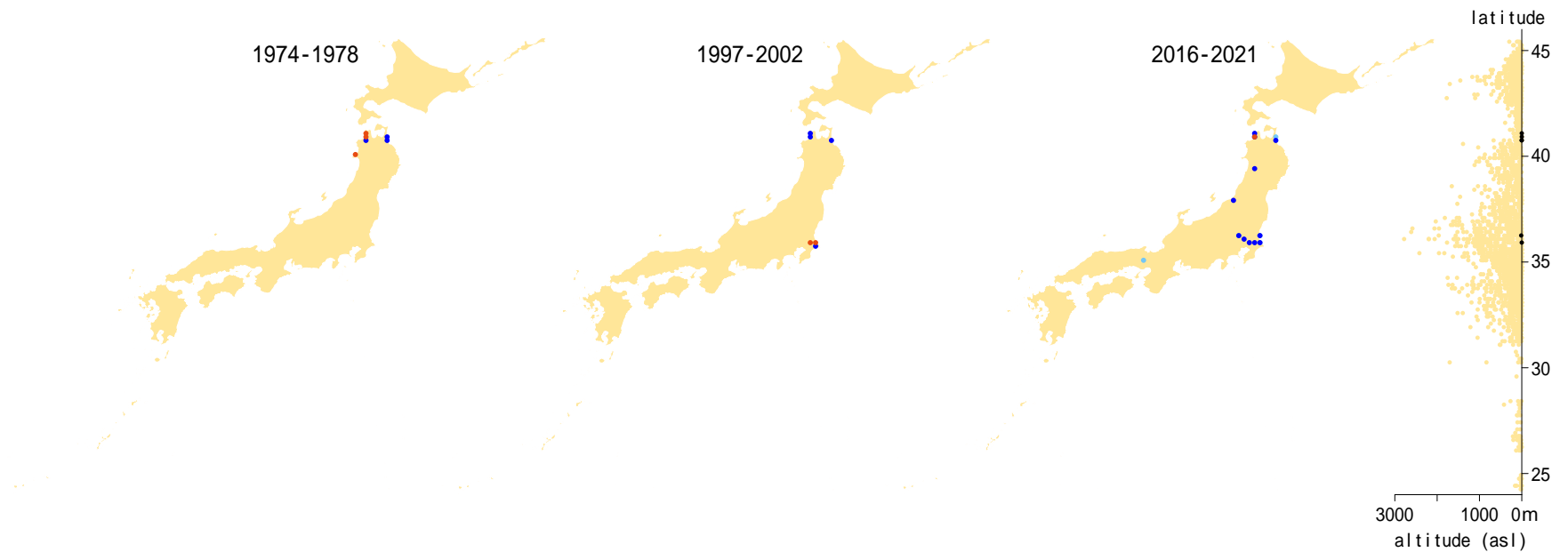
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	3	3	0
1997-2002	2	4	0
2016-2021	1	10	3

Recorded survey sites	
1997-2002	4
2016-2021	6



Altitudinal distribution
survey sites
recorded sites



Gray's Grasshopper Warbler

Locustella fasciolata

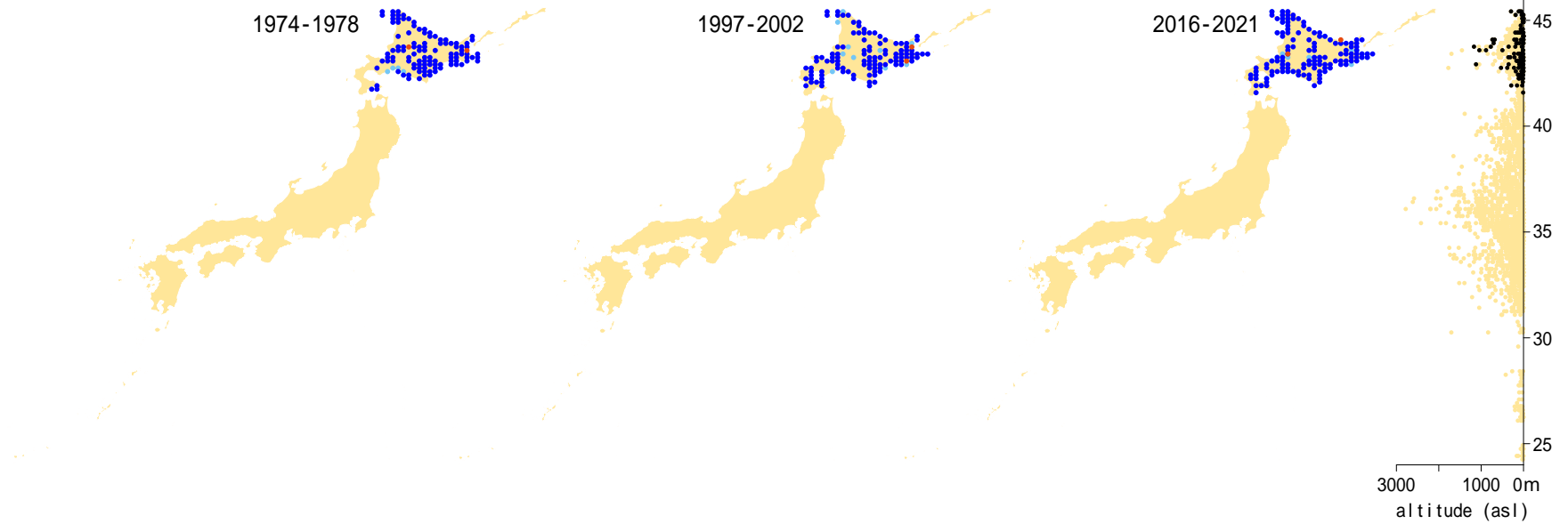
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	107	4
1997-2002	2	106	10
2016-2021	2	124	5

Recorded survey sites	
1997-2002	114
2016-2021	131



Altitudinal distribution
survey sites
recorded sites



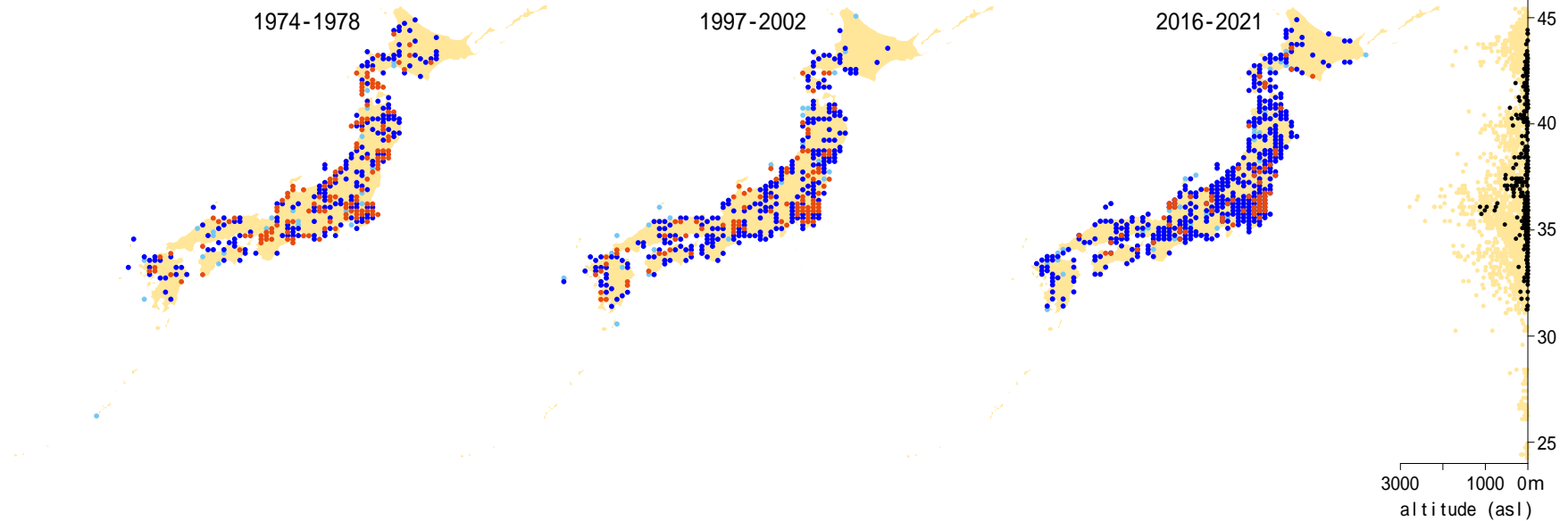
Oriental Reed Warbler

Acrocephalus orientalis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	131	190	24
1997-2002	91	249	23
2016-2021	67	367	29

Recorded survey sites	
1997-2002	308
2016-2021	307



Black-browed Reed Warbler

Acrocephalus bistrigiceps

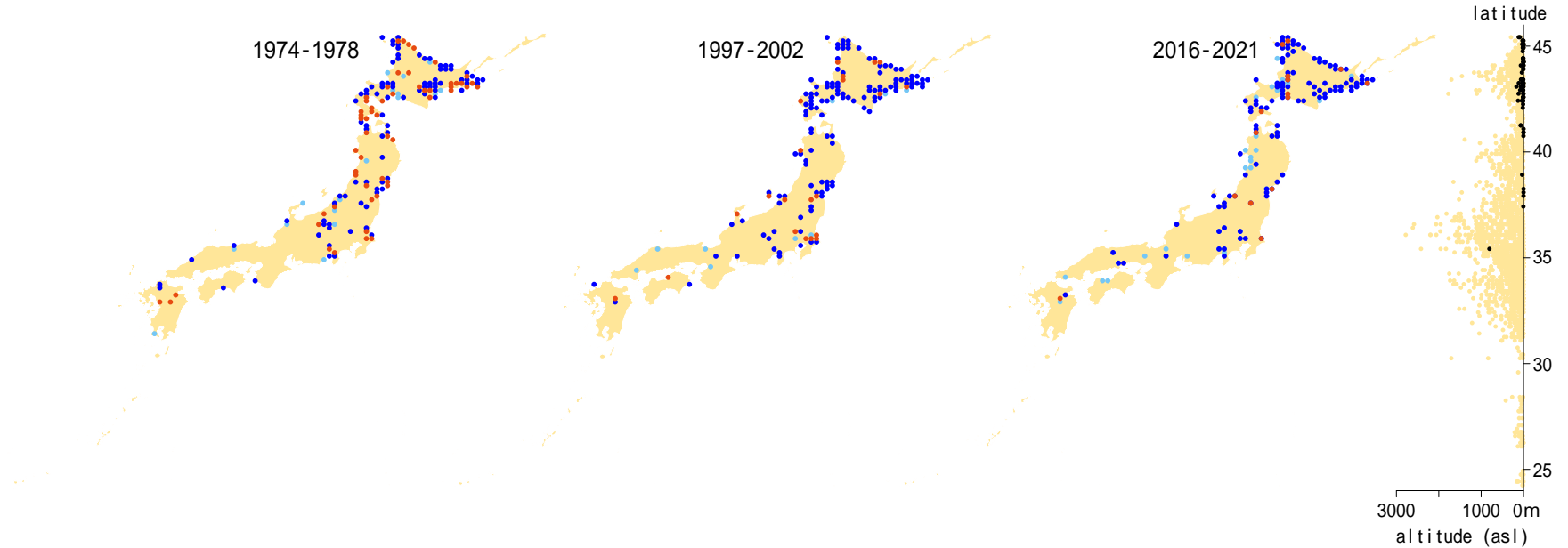
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	56	90	17
1997-2002	21	124	9
2016-2021	15	101	24

Recorded survey sites	
1997-2002	112
2016-2021	65



Altitudinal distribution
survey sites
recorded sites



Zitting Cisticola

Cisticola juncidis

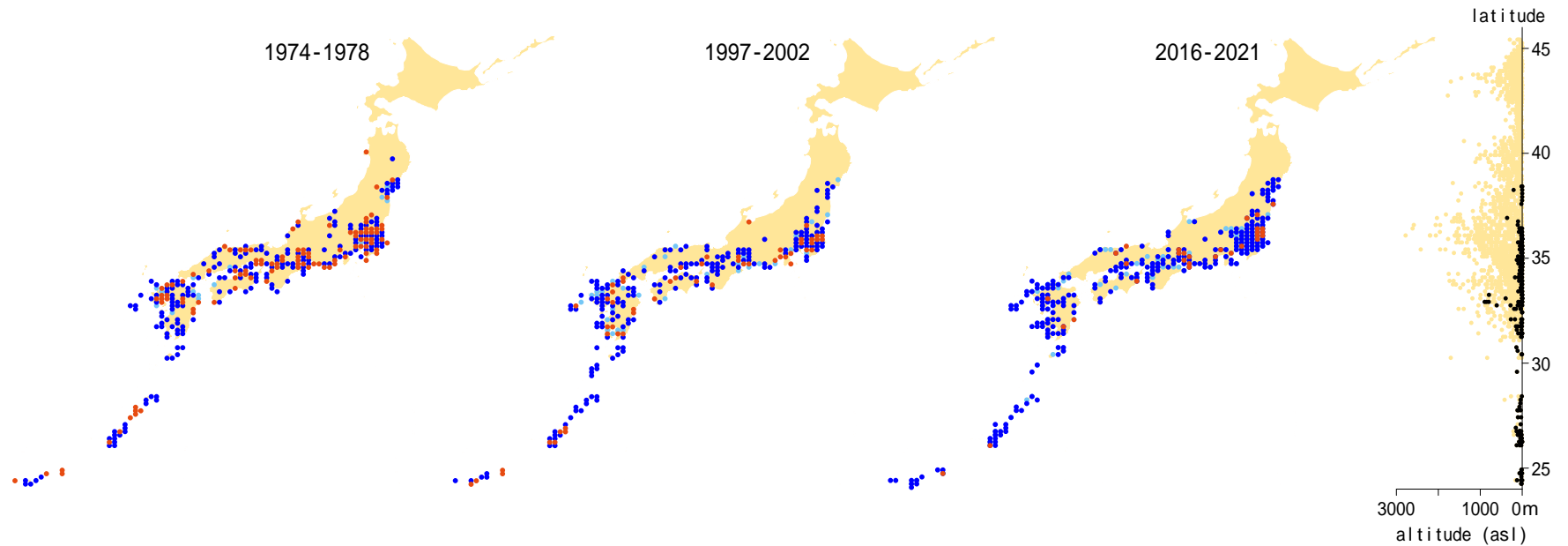
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	106	188	14
1997-2002	53	184	31
2016-2021	30	230	26

Recorded survey sites	
1997-2002	250
2016-2021	211



Altitudinal distribution
survey sites
recorded sites



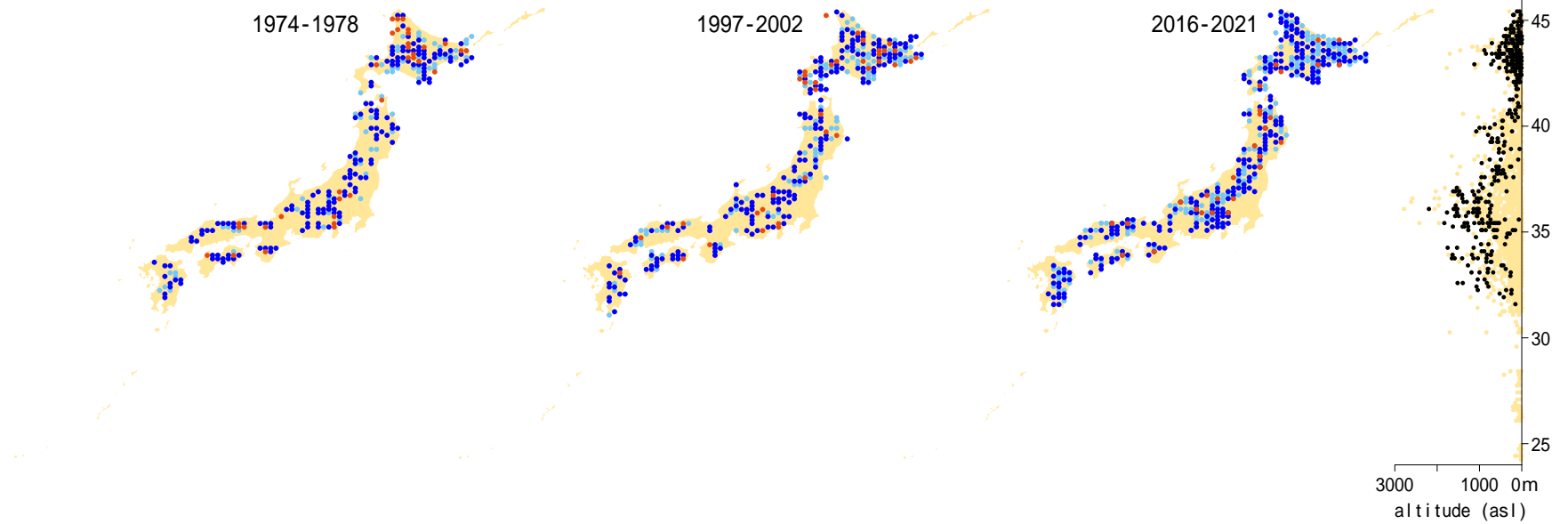
Eurasian Nuthatch

Sitta europaea

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	34	170	63
1997-2002	38	195	95
2016-2021	28	239	141

Recorded survey sites	
1997-2002	273
2016-2021	299



Eurasian Treecreeper

Certhia familiaris

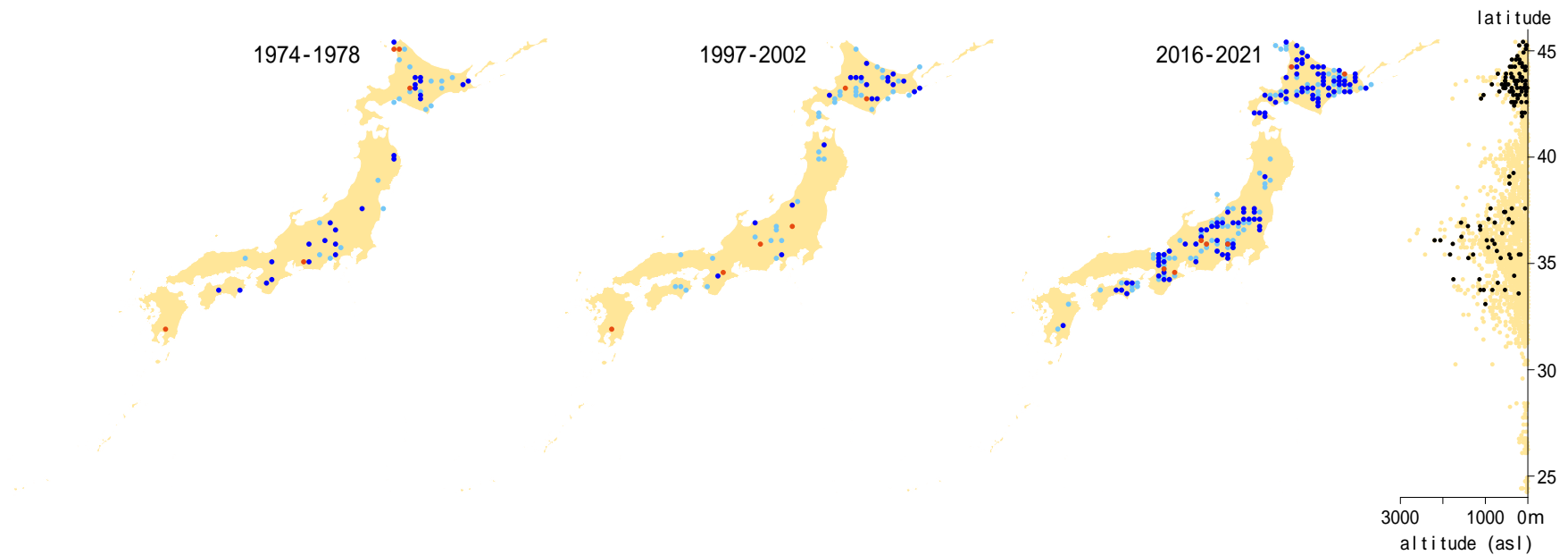
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	5	25	20
1997-2002	6	20	37
2016-2021	7	103	76

Recorded survey sites	
1997-2002	32
2016-2021	94



Altitudinal distribution
survey sites
recorded sites



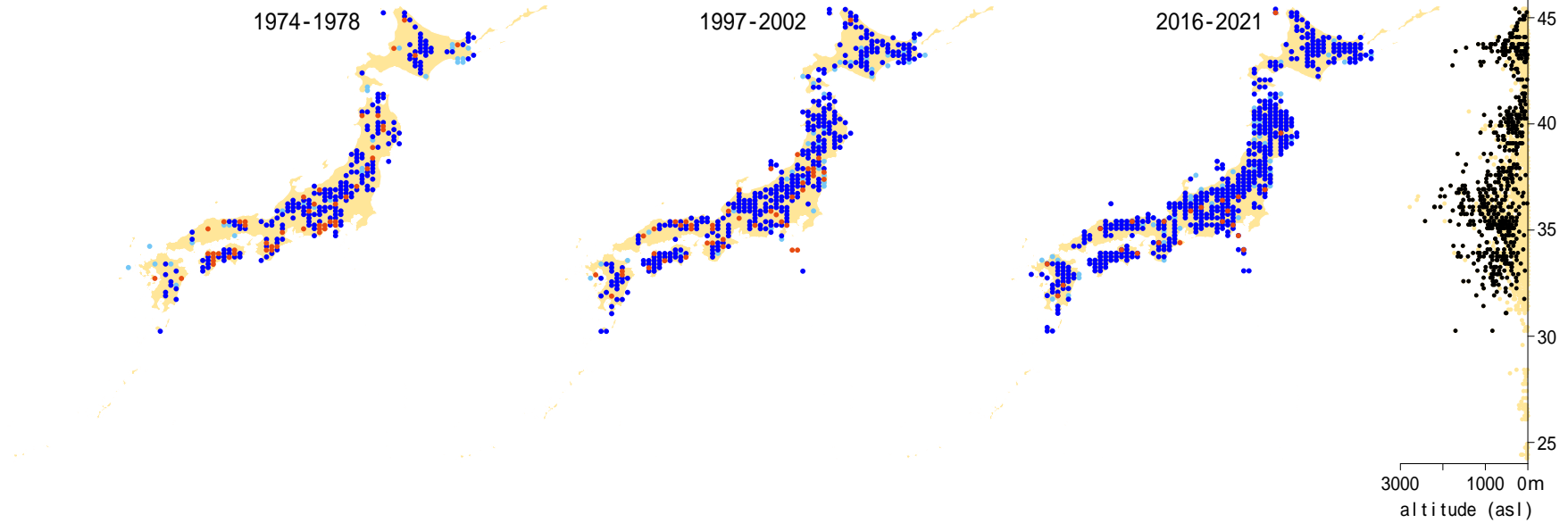
Eurasian Wren

Troglodytes troglodytes

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	49	216	27
1997-2002	44	355	39
2016-2021	22	487	43

Recorded survey sites	
1997-2002	422
2016-2021	514



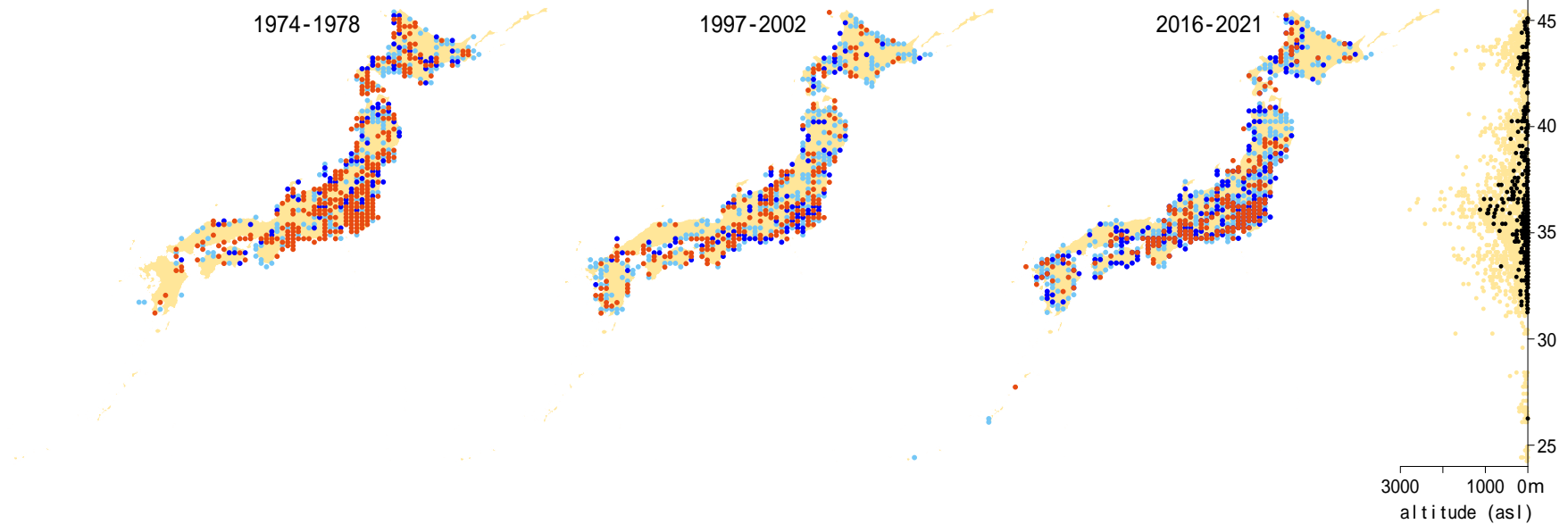
White-cheeked Starling

Spodiopsar cineraceus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	290	90	157
1997-2002	193	96	234
2016-2021	210	128	241

Recorded survey sites	
1997-2002	521
2016-2021	408



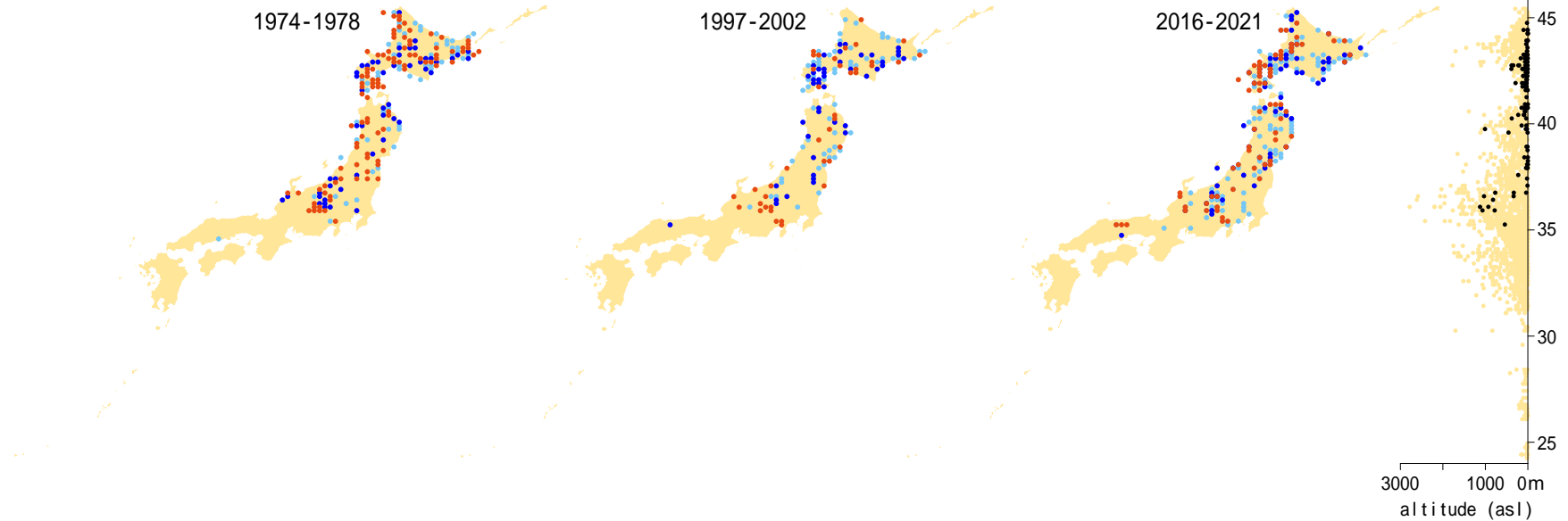
Chestnut-cheeked Starling

Agropsar philippensis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	99	50	55
1997-2002	40	44	58
2016-2021	73	42	89

Recorded survey sites	
1997-2002	95
2016-2021	102



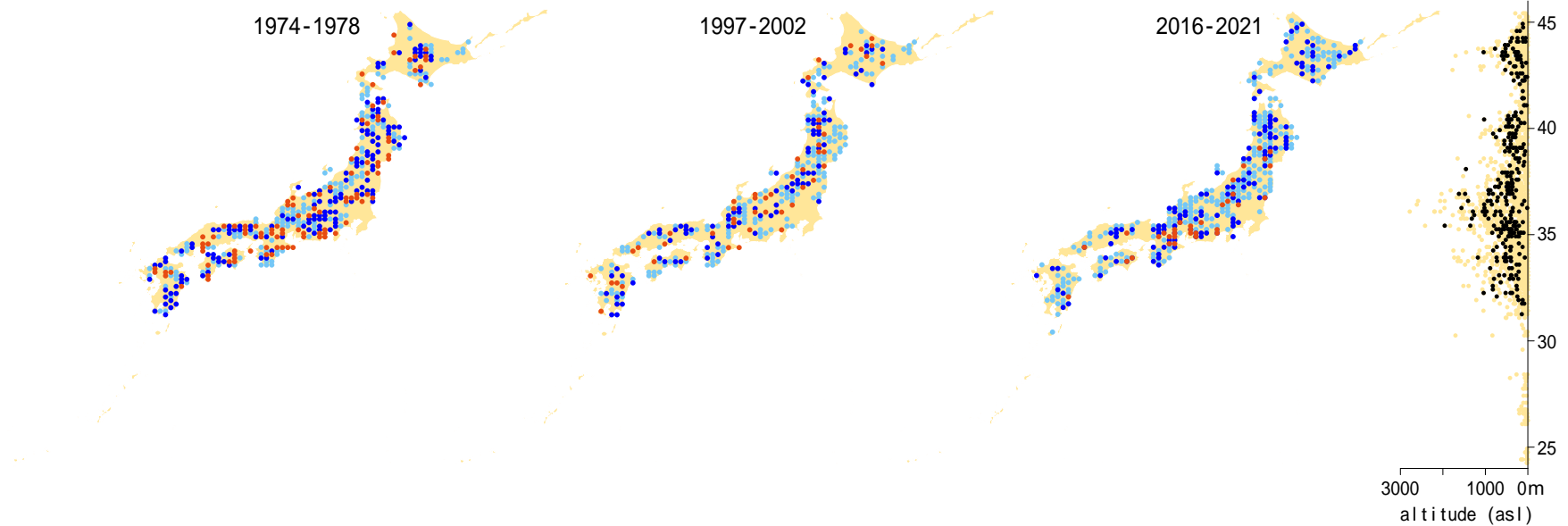
Brown Dipper

Cinclus pallasii

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	101	149	158
1997-2002	48	89	180
2016-2021	33	119	249

Recorded survey sites	
1997-2002	254
2016-2021	263



Siberian Thrush

Zoothera sibirica

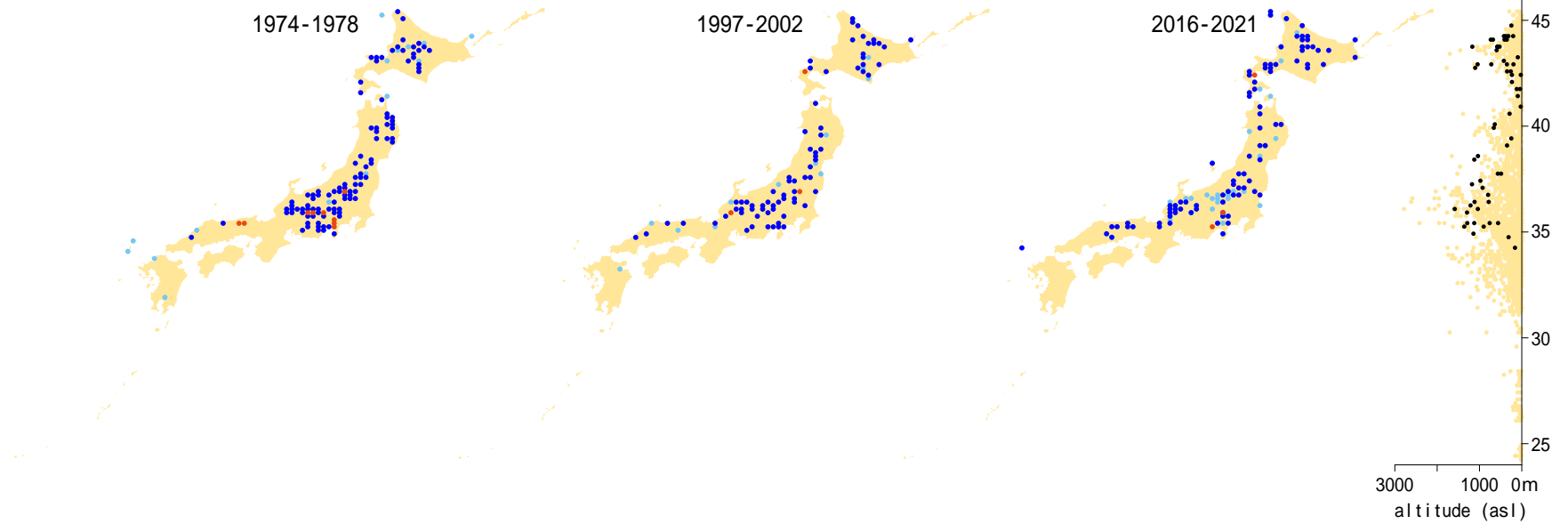
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	9	103	15
1997-2002	3	74	12
2016-2021	3	87	23

Recorded survey sites	
1997-2002	54
2016-2021	44



Altitudinal distribution
survey sites
recorded sites



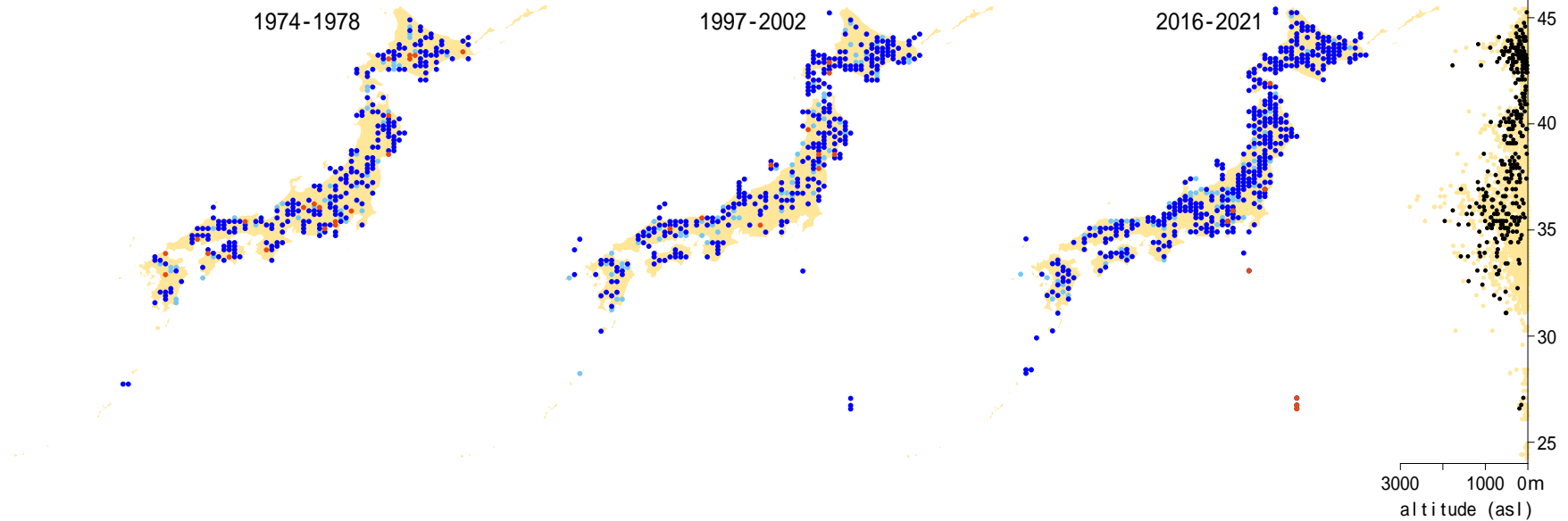
Scaly Thrush

Zoothera dauma

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	21	246	42
1997-2002	10	294	66
2016-2021	8	397	57

Recorded survey sites	
1997-2002	289
2016-2021	284



Amami Thrush

Zoothera dauma major

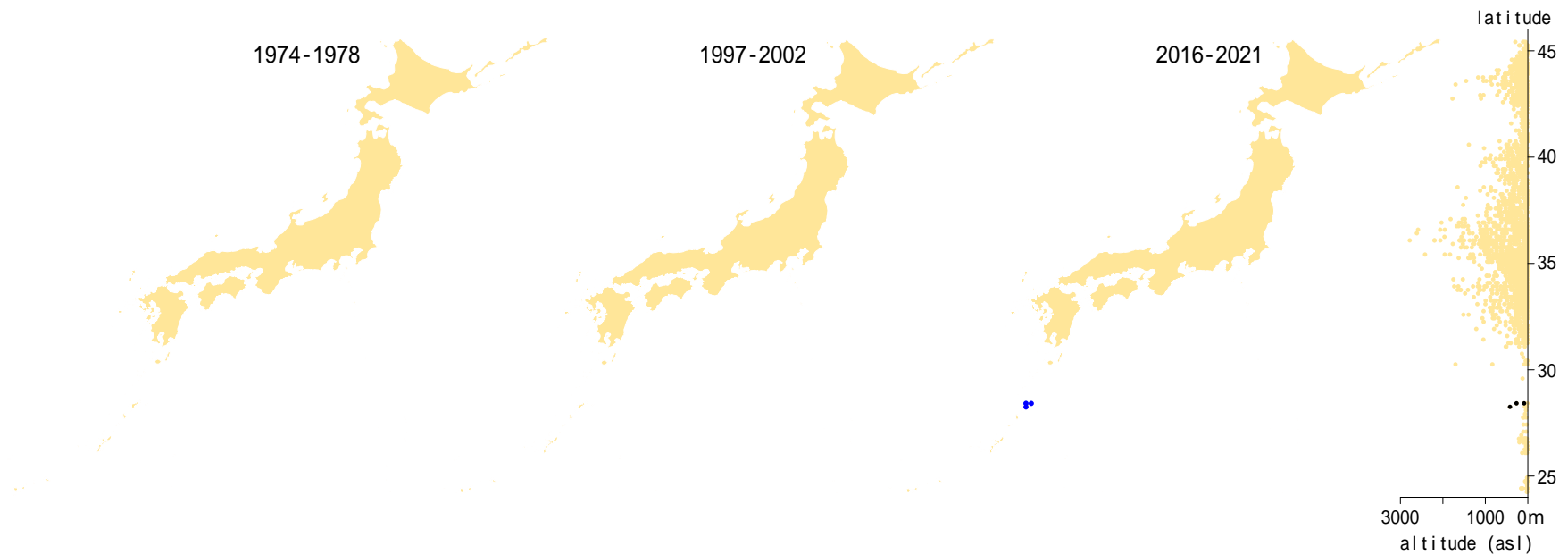
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	3	0

Recorded survey sites	
1997-2002	0
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



Note: no records in the 1970s and 1990s because subspecies were not recorded.

Grey-backed Thrush

Turdus hortulorum

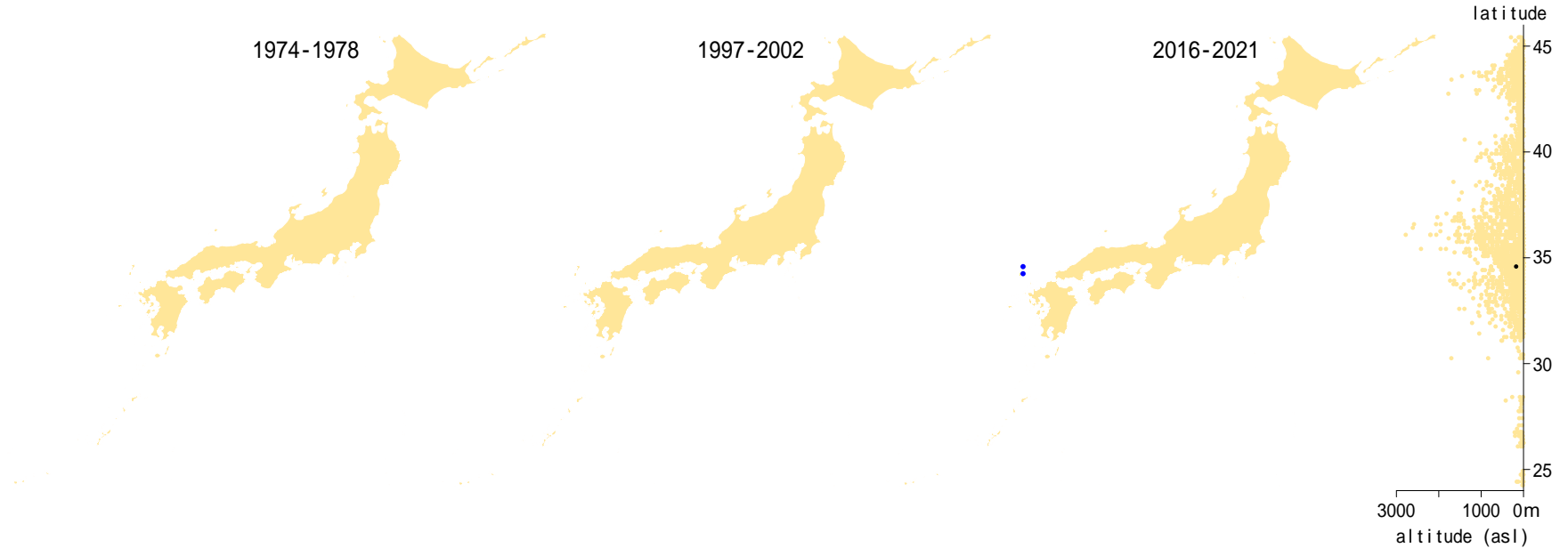
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	2	0

Recorded survey sites	
1997-2002	0
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



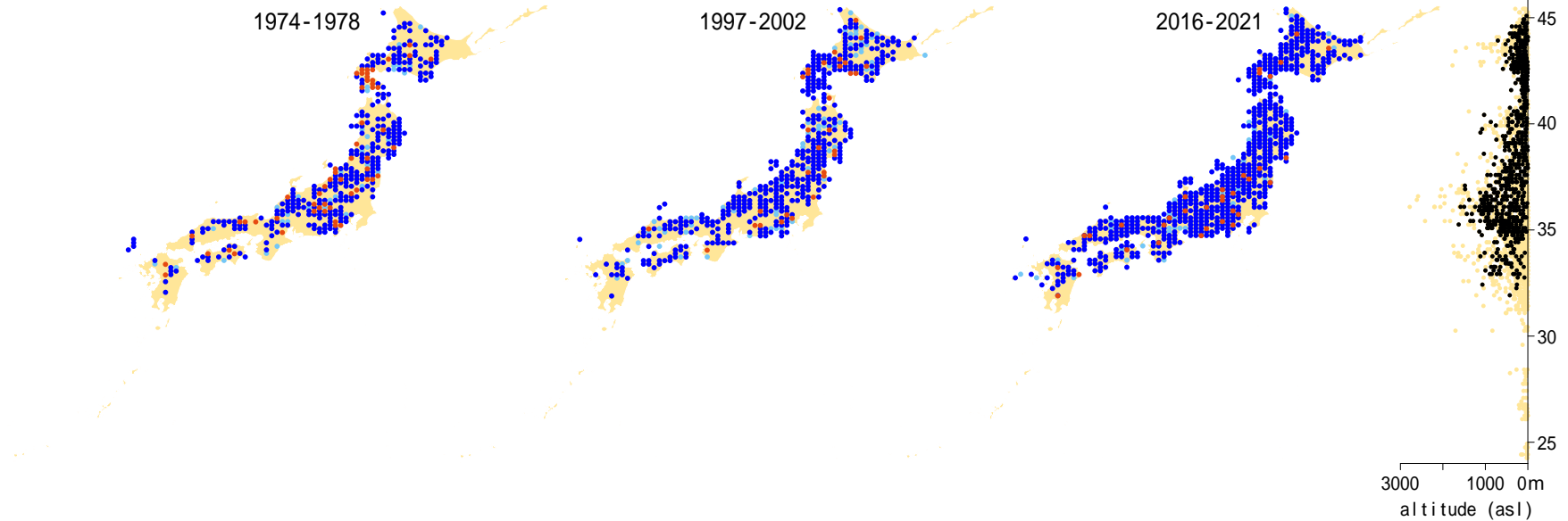
Japanese Thrush

Turdus cardis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	56	313	34
1997-2002	31	417	62
2016-2021	34	631	35

Recorded survey sites	
1997-2002	451
2016-2021	637



Pale Thrush

Turdus pallidus

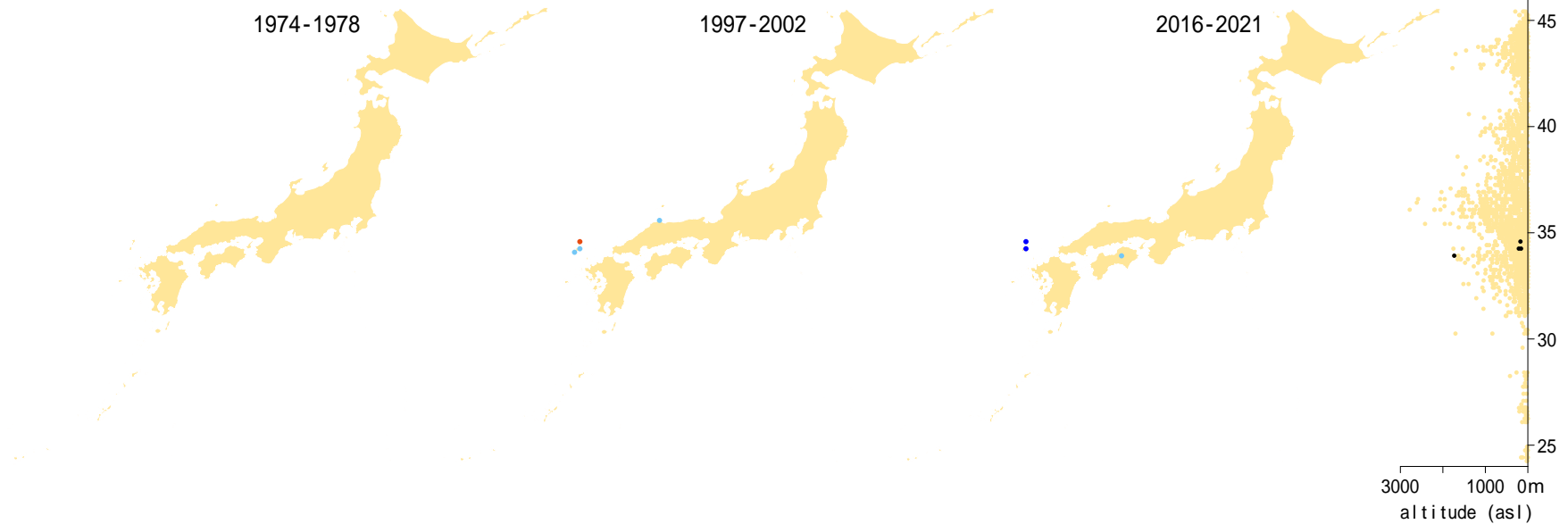
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	1	0	3
2016-2021	0	2	1

Recorded survey sites	
1997-2002	14
2016-2021	9



Altitudinal distribution
survey sites
recorded sites



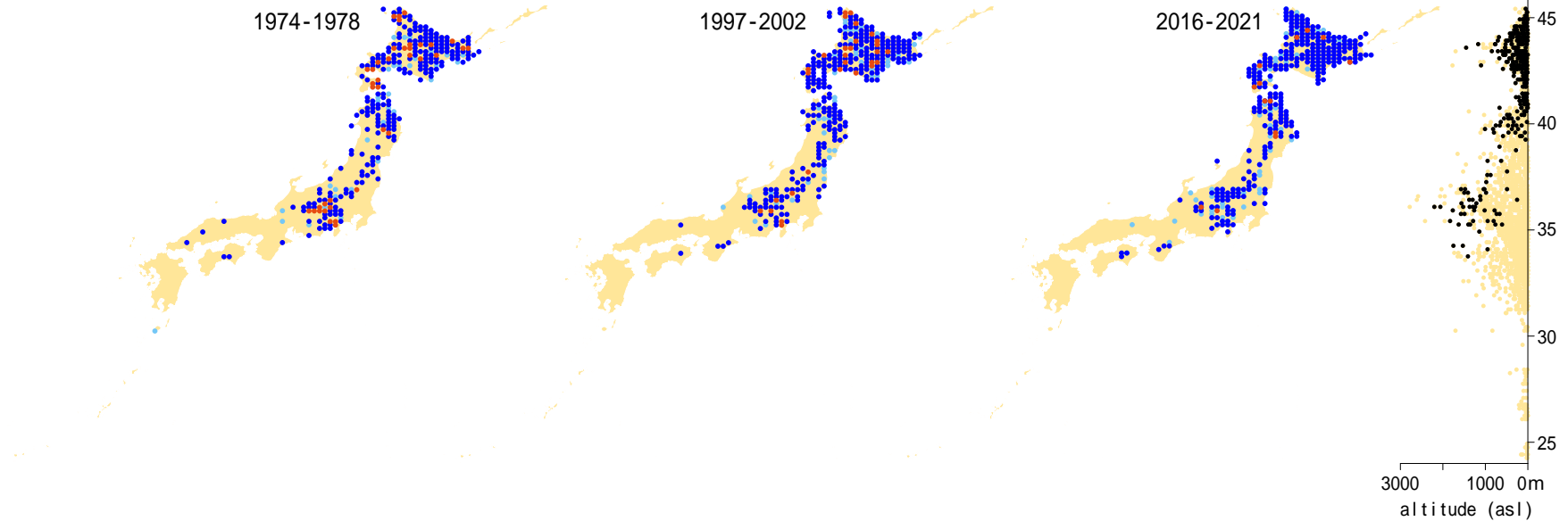
Brown-headed Thrush

Turdus chrysolais

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	38	233	32
1997-2002	29	279	45
2016-2021	13	290	45

Recorded survey sites	
1997-2002	394
2016-2021	293



Izu Thrush

Turdus celaenops

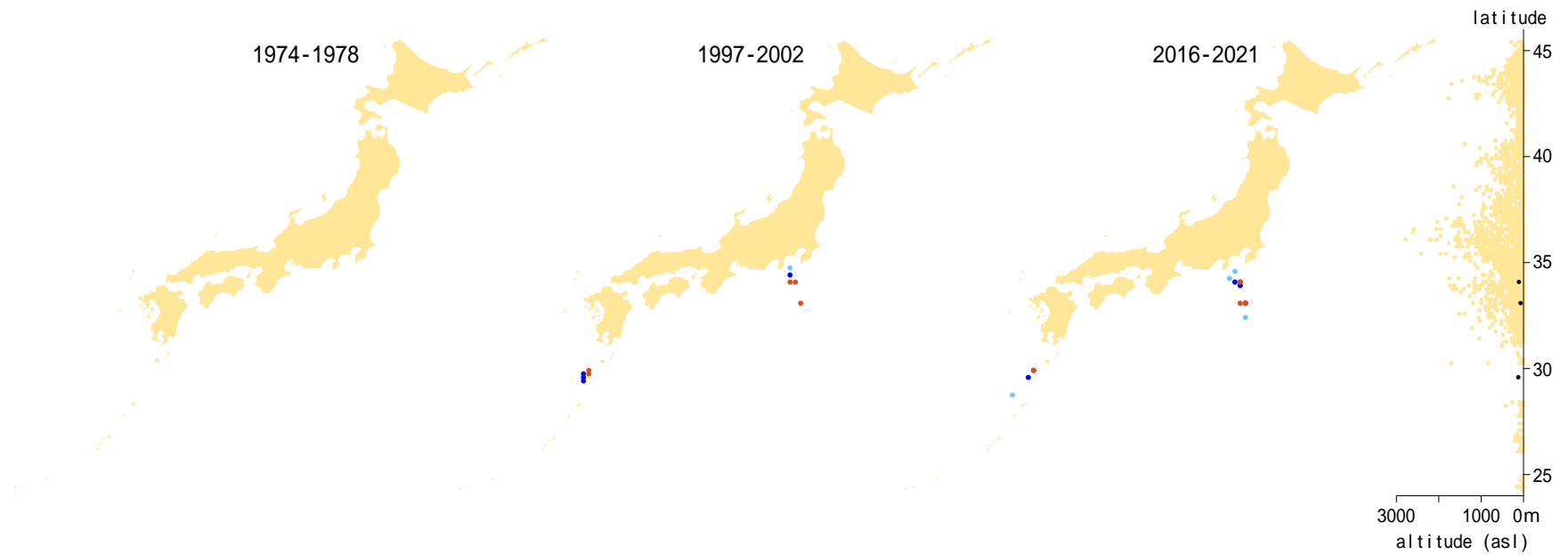
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	5	4	1
2016-2021	4	3	4

Recorded survey sites	
1997-2002	4
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



Japanese Robin

Luscinia akahige

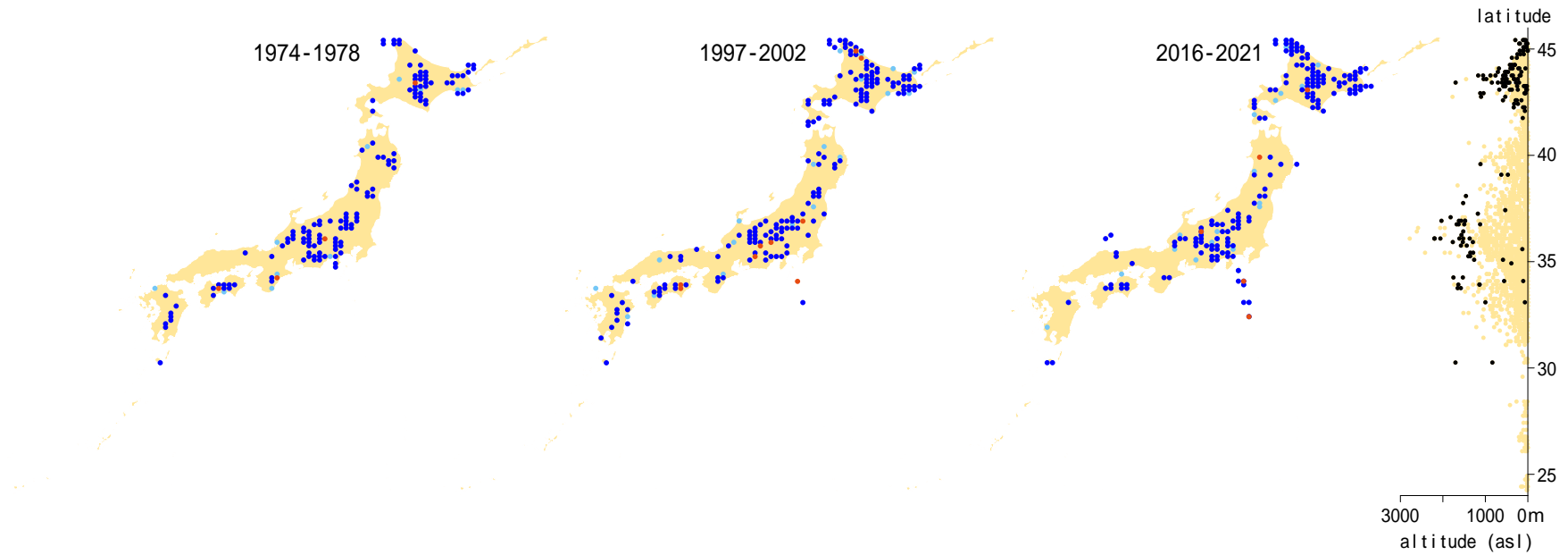
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	4	135	11
1997-2002	9	162	19
2016-2021	5	160	17

Recorded survey sites	
1997-2002	163
2016-2021	124



Altitudinal distribution
survey sites
recorded sites



Ryukyu Robin

Luscinia komadori

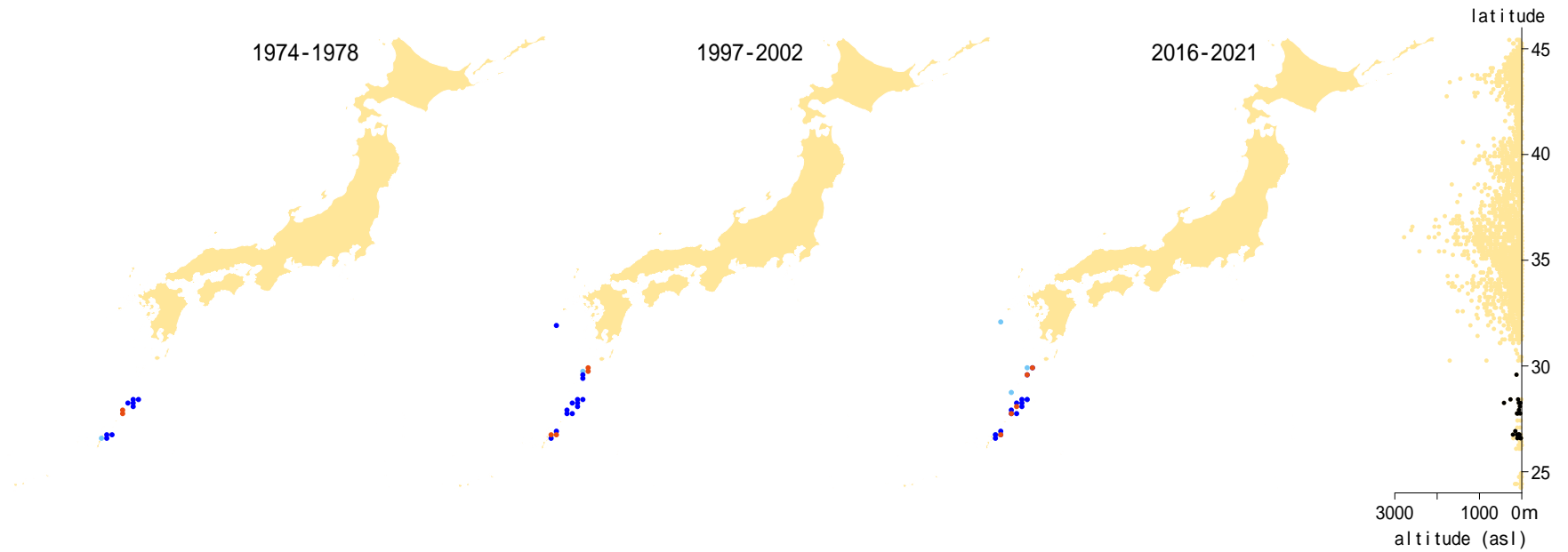
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	8	1
1997-2002	4	13	1
2016-2021	6	10	3

Recorded survey sites	
1997-2002	20
2016-2021	20



Altitudinal distribution
survey sites
recorded sites



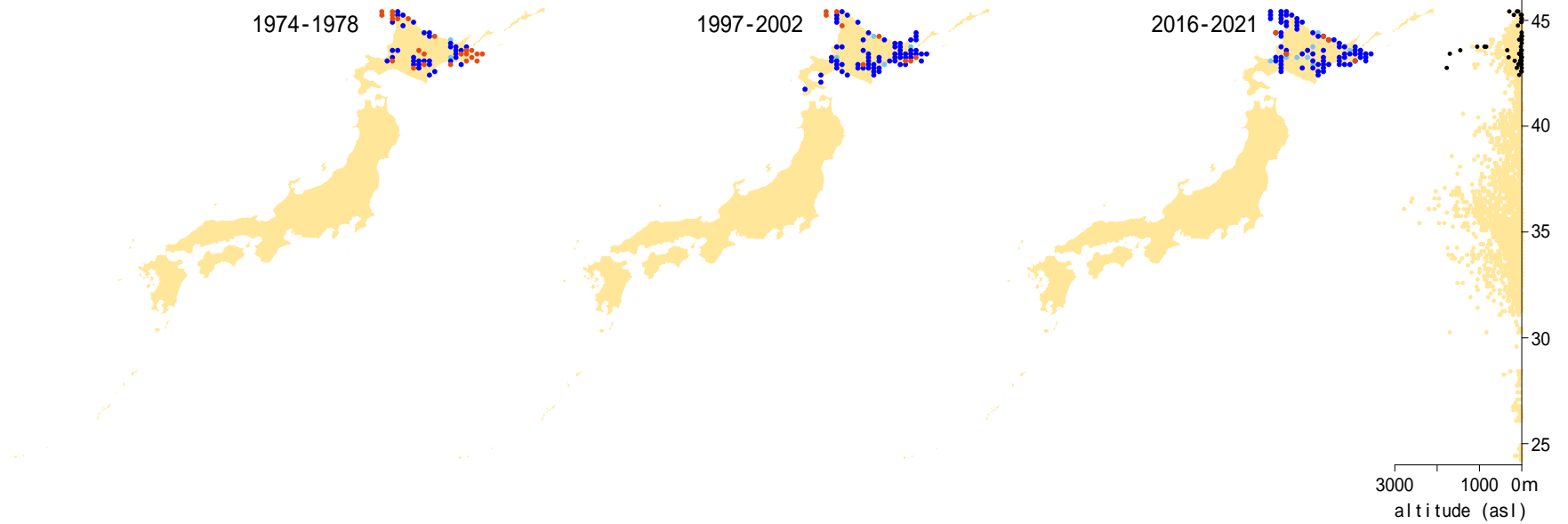
Siberian Rubythroat

Luscinia calliope

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	23	34	2
1997-2002	9	66	4
2016-2021	5	68	8

Recorded survey sites	
1997-2002	64
2016-2021	46



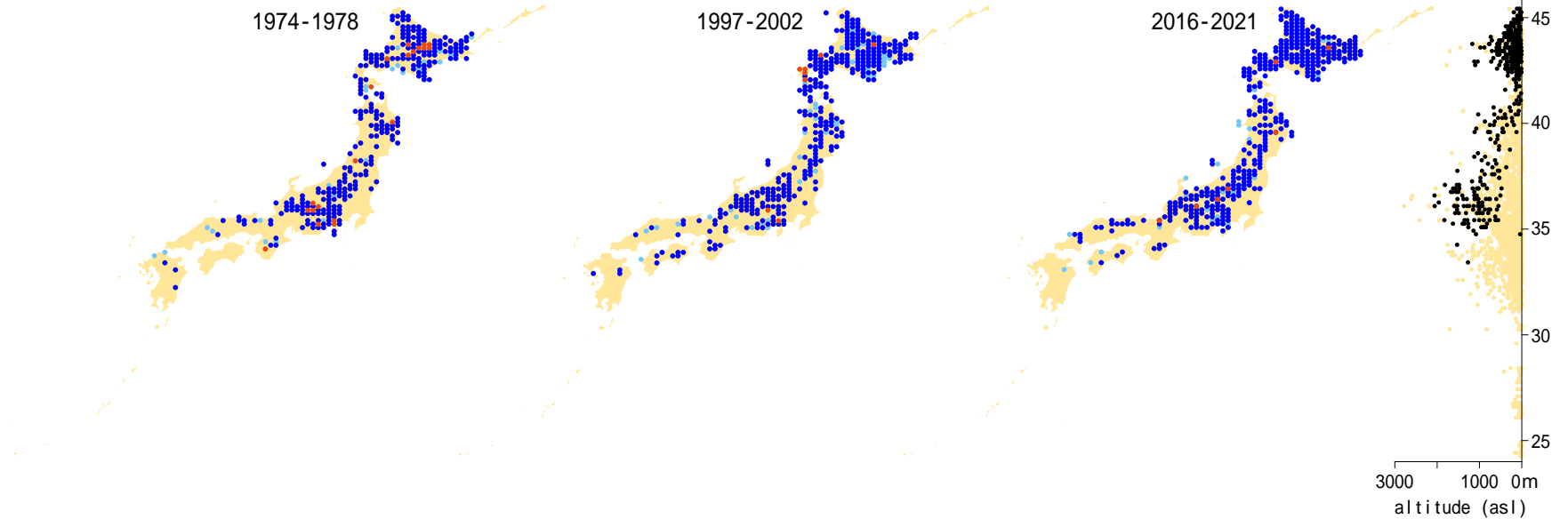
Siberian Blue Robin

Luscinia cyane

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	20	274	23
1997-2002	8	329	37
2016-2021	7	371	24

Recorded survey sites	
1997-2002	384
2016-2021	342



Red-flanked Bluetail

Tarsiger cyanurus

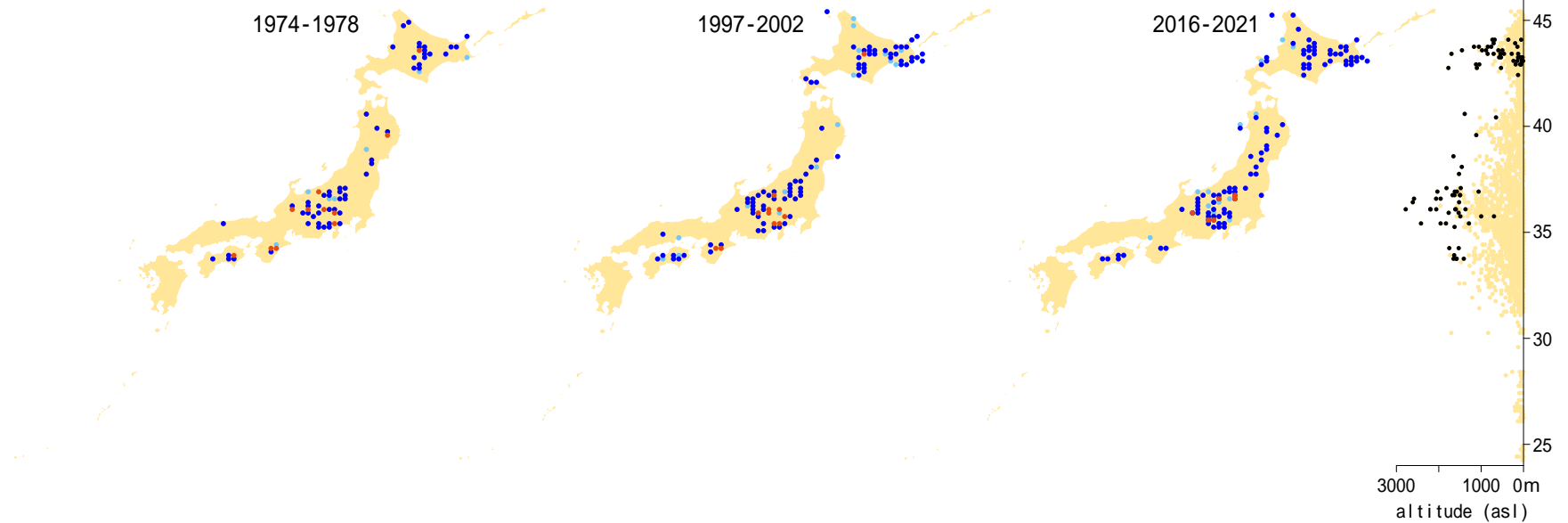
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	11	57	7
1997-2002	11	84	16
2016-2021	6	94	13

Recorded survey sites	
1997-2002	81
2016-2021	84



Altitudinal distribution
survey sites
recorded sites



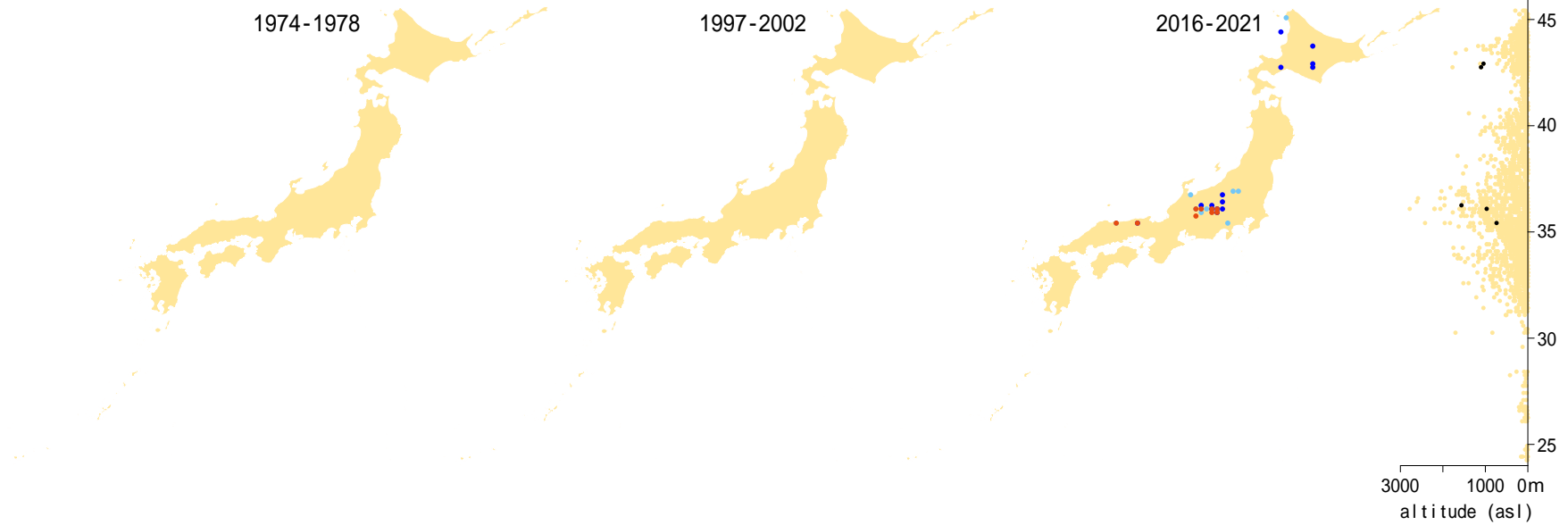
Daurian Redstart

Phoenicurus aureus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	9	10	7

Recorded survey sites	
1997-2002	1
2016-2021	5



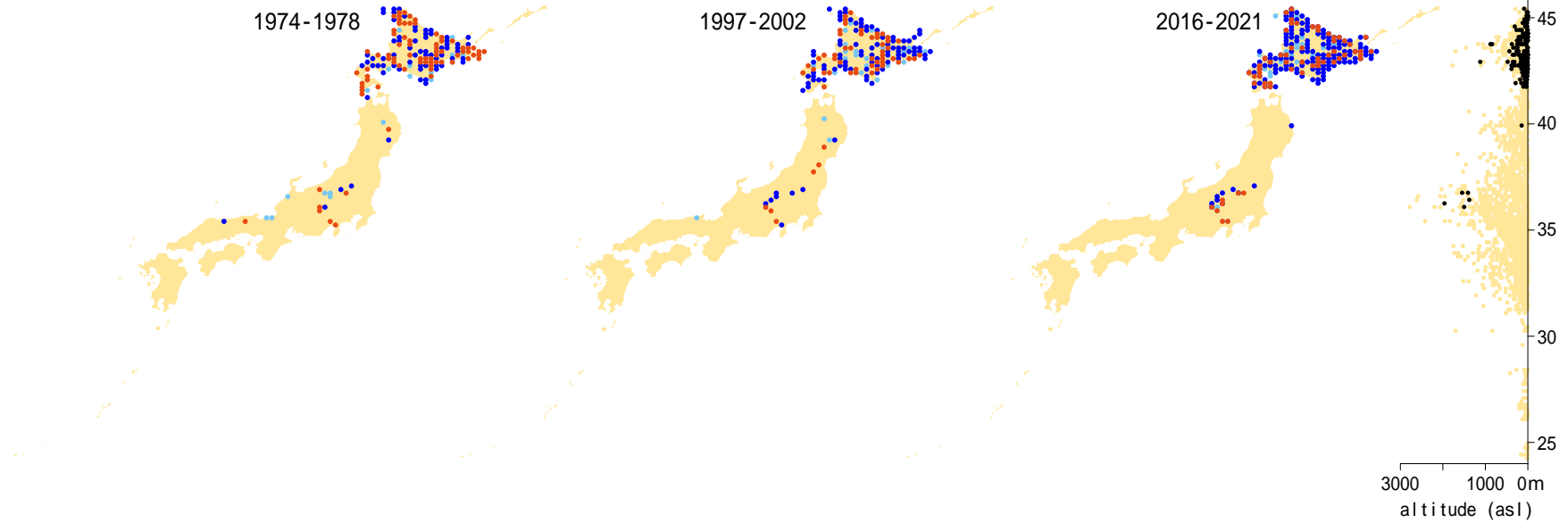
Siberian Stonechat

Saxicola torquatus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	76	67	17
1997-2002	54	91	23
2016-2021	60	124	18

Recorded survey sites	
1997-2002	170
2016-2021	182



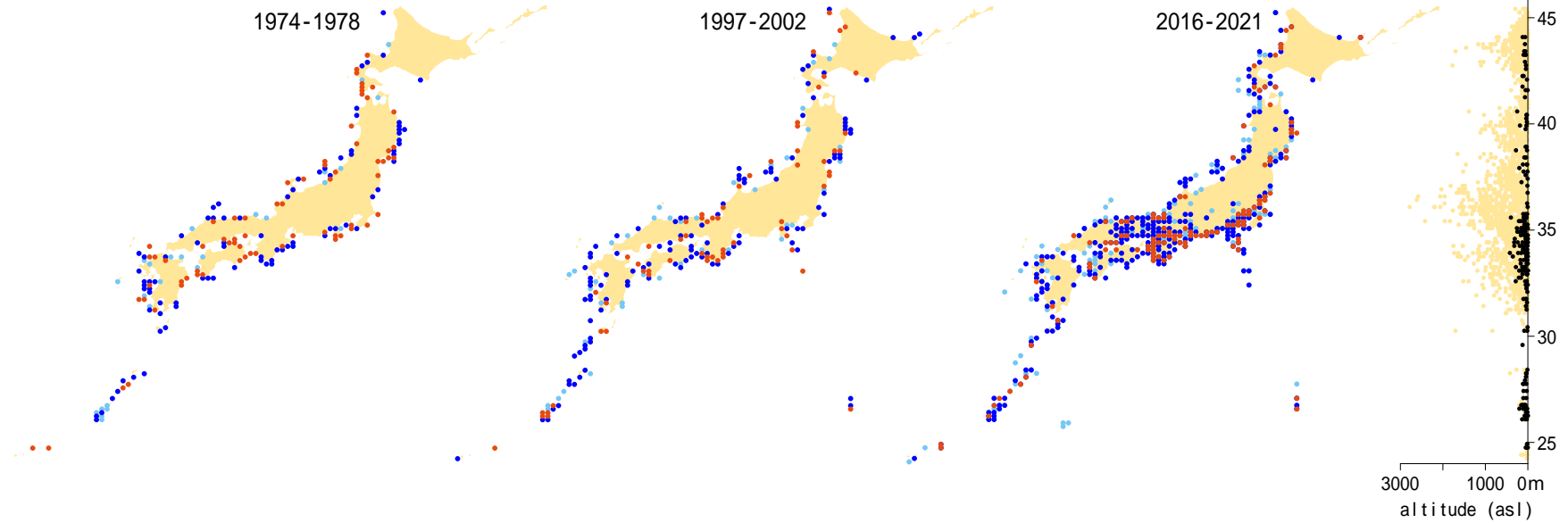
Blue Rock Thrush

Monticola solitarius

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	69	84	26
1997-2002	62	110	40
2016-2021	119	219	85

Recorded survey sites	
1997-2002	137
2016-2021	204



Dark-sided Flycatcher

Muscicapa sibirica

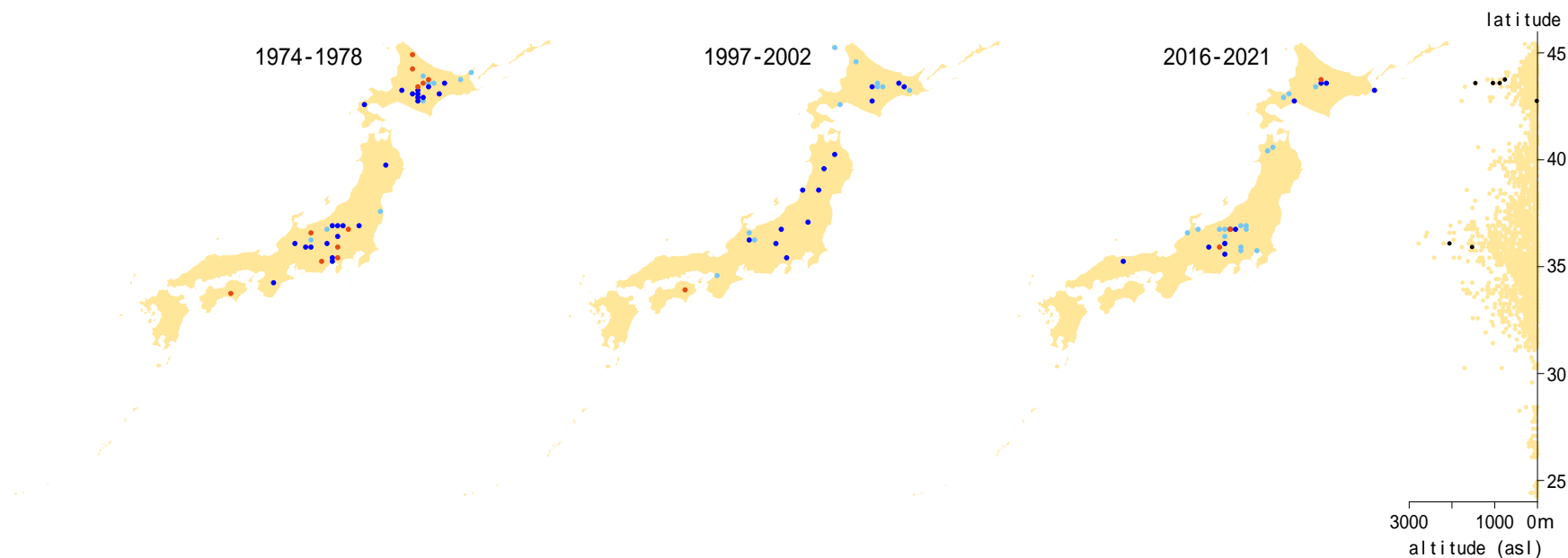
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	11	24	9
1997-2002	1	13	10
2016-2021	3	9	16

Recorded survey sites	
1997-2002	13
2016-2021	6



Altitudinal distribution
survey sites
recorded sites



Asian Brown Flycatcher

Muscicapa dauurica

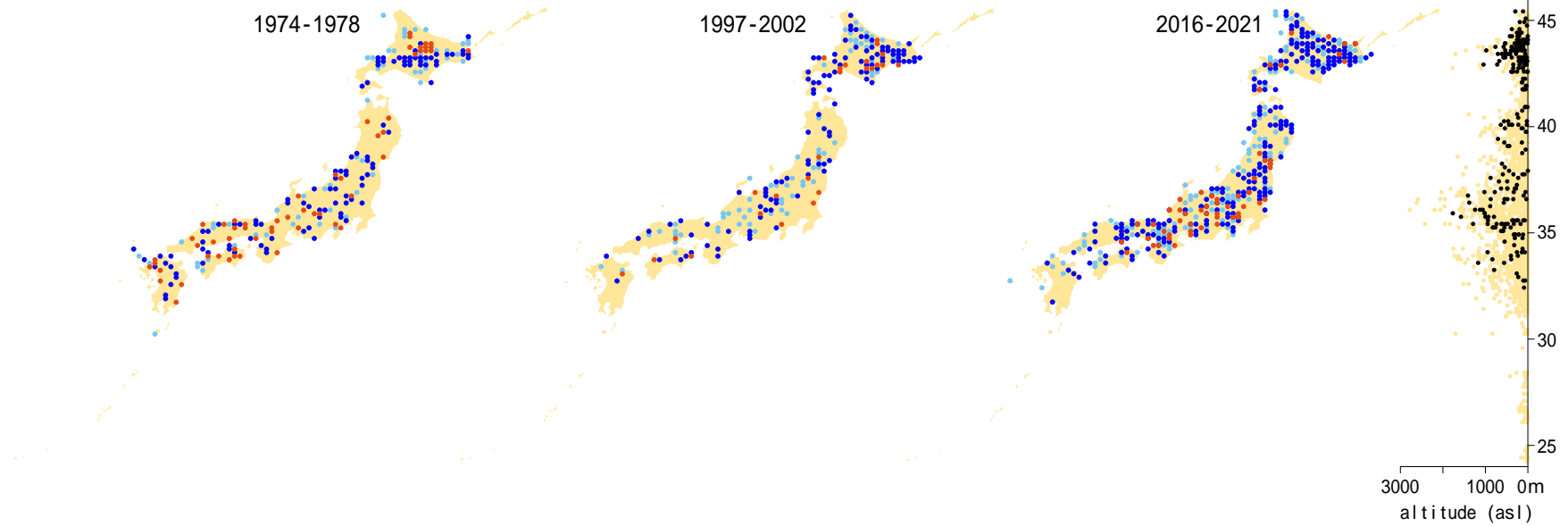
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	57	104	55
1997-2002	25	106	67
2016-2021	54	208	117

Recorded survey sites	
1997-2002	122
2016-2021	202



Altitudinal distribution
survey sites
recorded sites



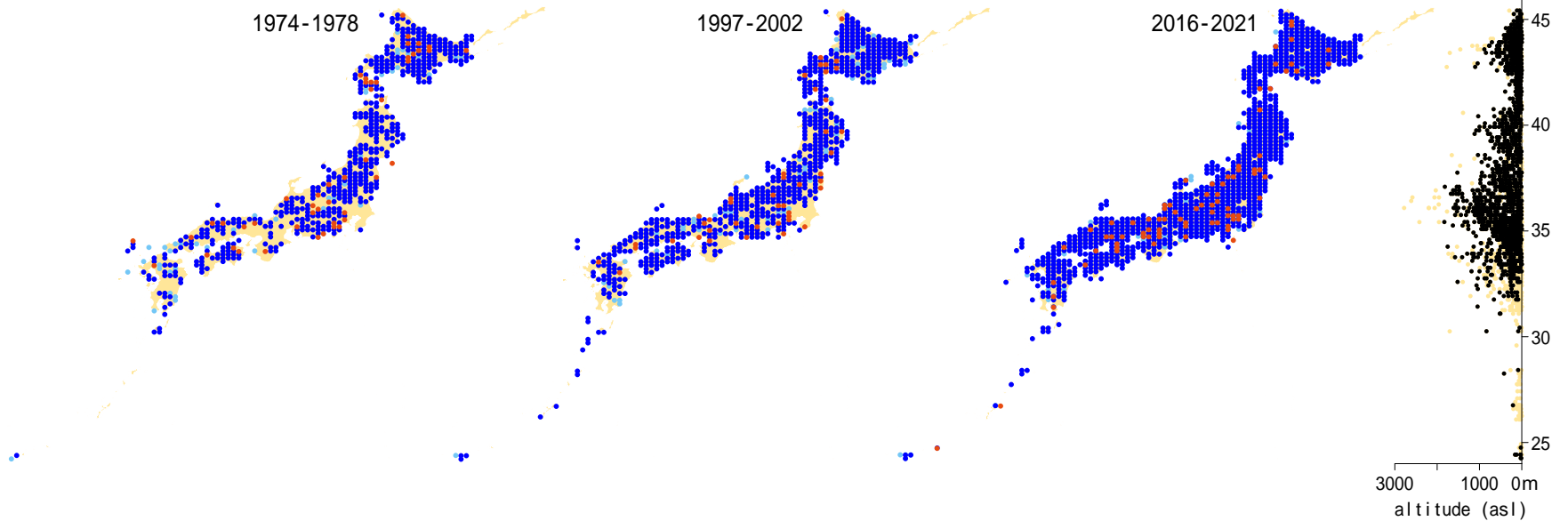
Narcissus Flycatcher

Ficedula narcissina

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	48	505	42
1997-2002	44	666	58
2016-2021	80	927	23

Recorded survey sites	
1997-2002	860
2016-2021	1357



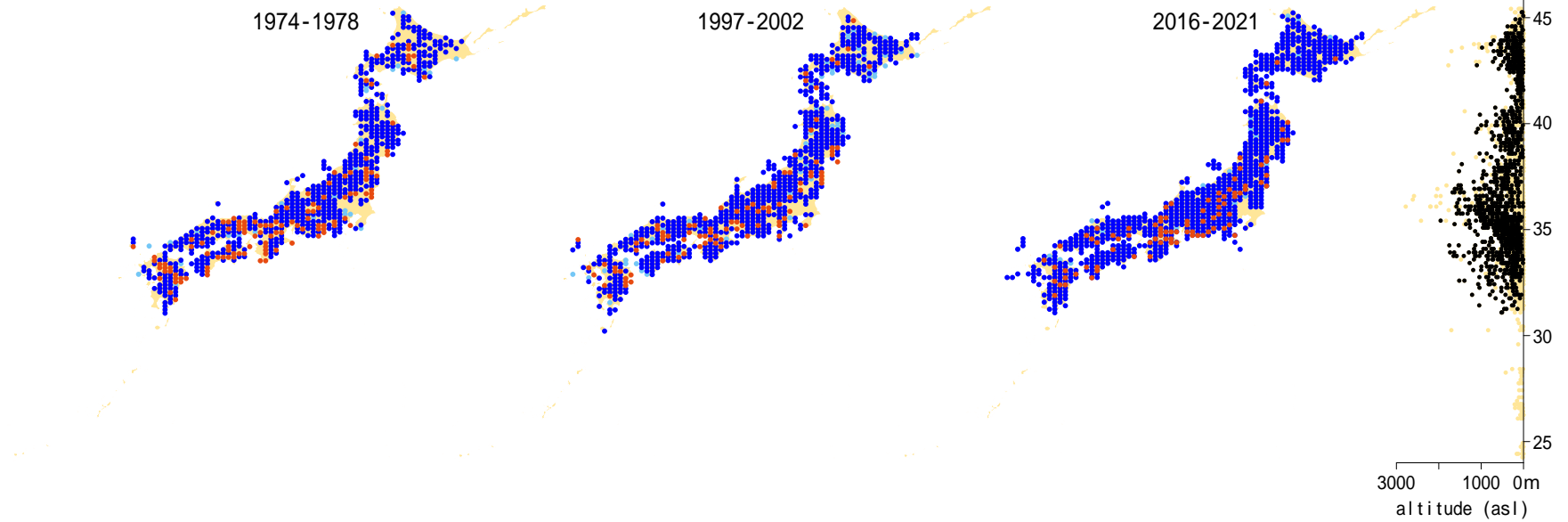
Blue-and-white Flycatcher

Cyanoptila cyanomelana

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	122	554	27
1997-2002	96	641	52
2016-2021	90	765	19

Recorded survey sites	
1997-2002	890
2016-2021	1002



Alpine Accentor

Prunella collaris

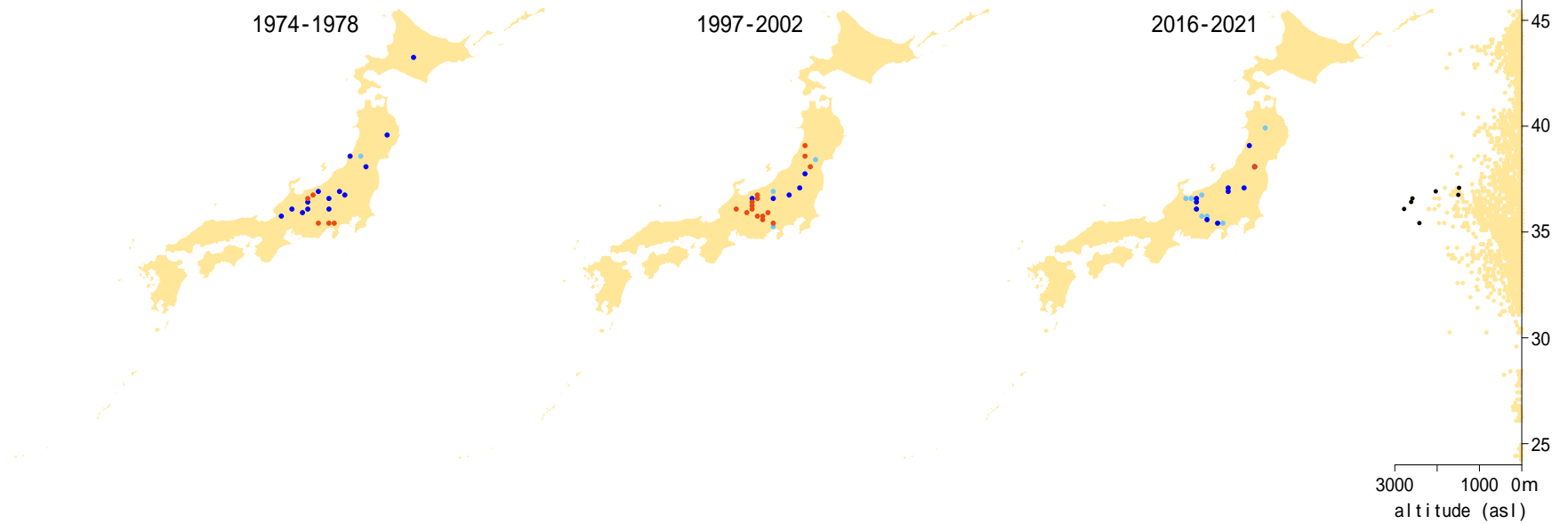
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	
	A B C
1974-1978	5 14 1
1997-2002	15 5 3
2016-2021	1 9 7

Recorded survey sites	
1997-2002	7
2016-2021	7



Altitudinal distribution
survey sites
recorded sites



Japanese Accentor

Prunella rubida

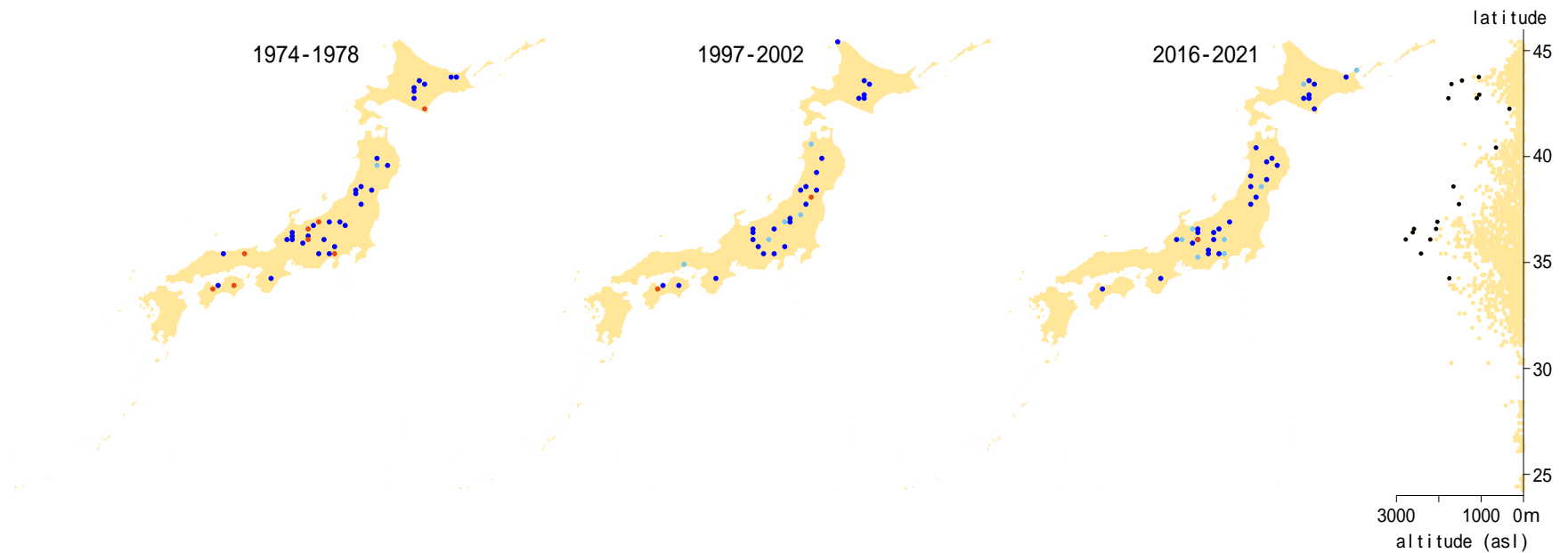
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	8	31	1
1997-2002	2	25	5
2016-2021	1	29	8

Recorded survey sites	
1997-2002	24
2016-2021	16



Altitudinal distribution
survey sites
recorded sites



Russet Sparrow

Passer rutilans

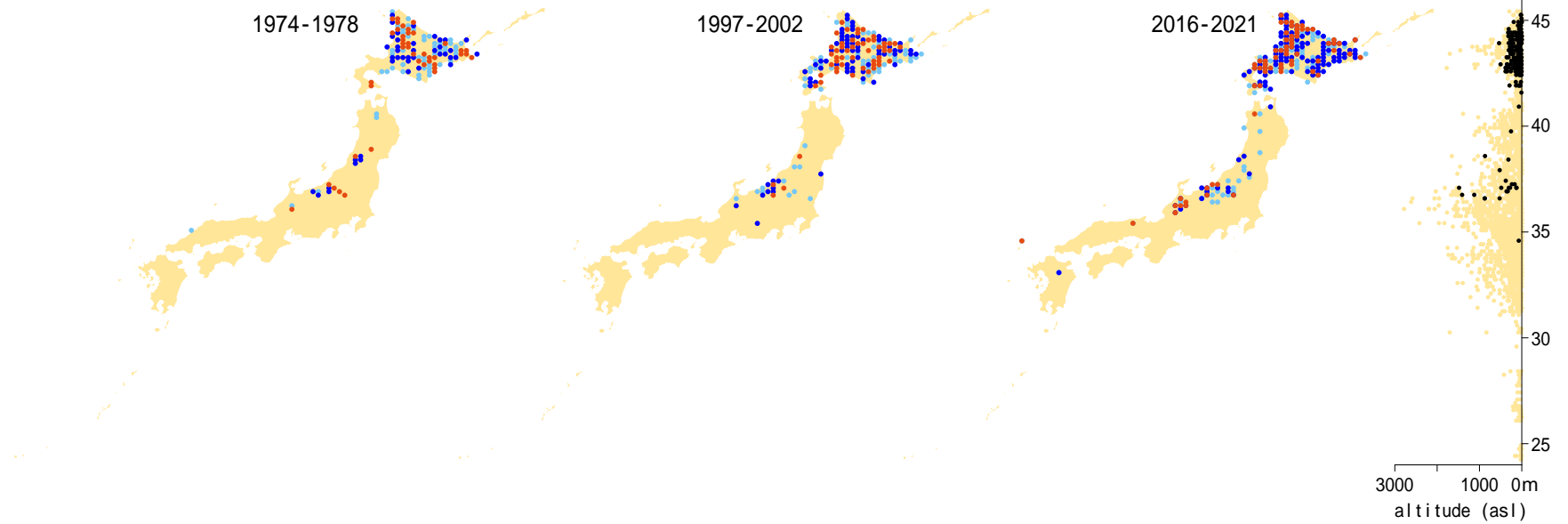
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	41	41	49
1997-2002	53	69	54
2016-2021	67	89	51

Recorded survey sites	
1997-2002	173
2016-2021	165



Altitudinal distribution
survey sites
recorded sites



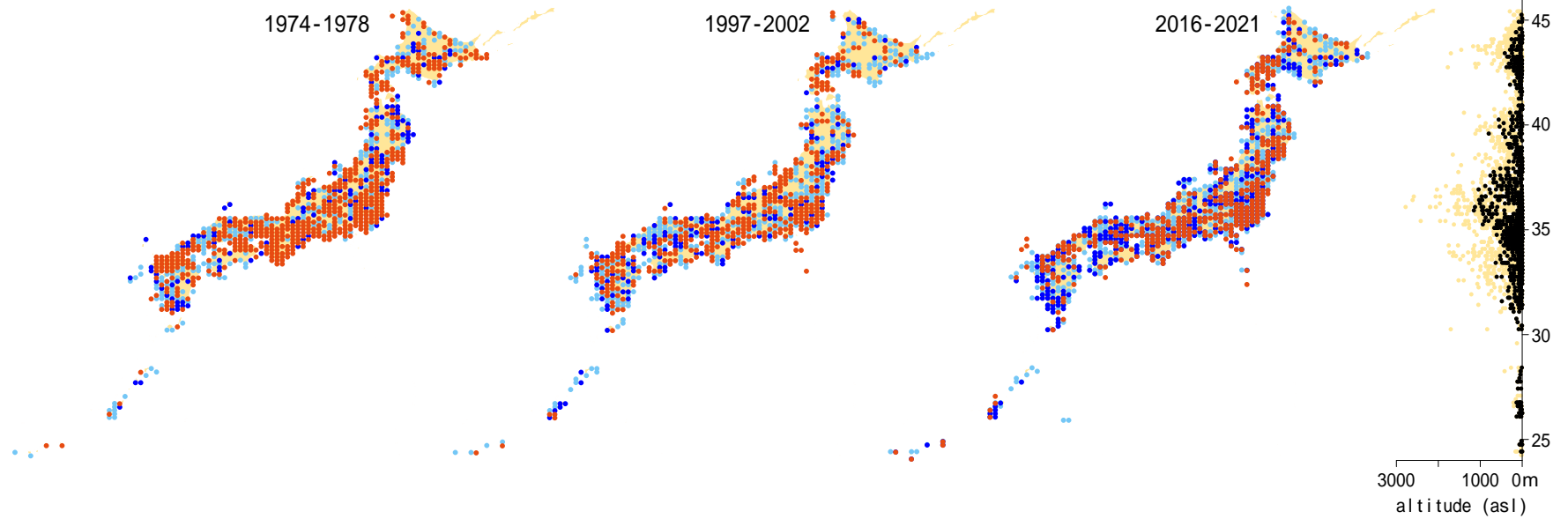
Eurasian Tree Sparrow

Passer montanus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	545	121	226
1997-2002	409	143	328
2016-2021	428	220	284

Recorded survey sites	
1997-2002	1081
2016-2021	950



Forest Wagtail

Dendronanthus indicus

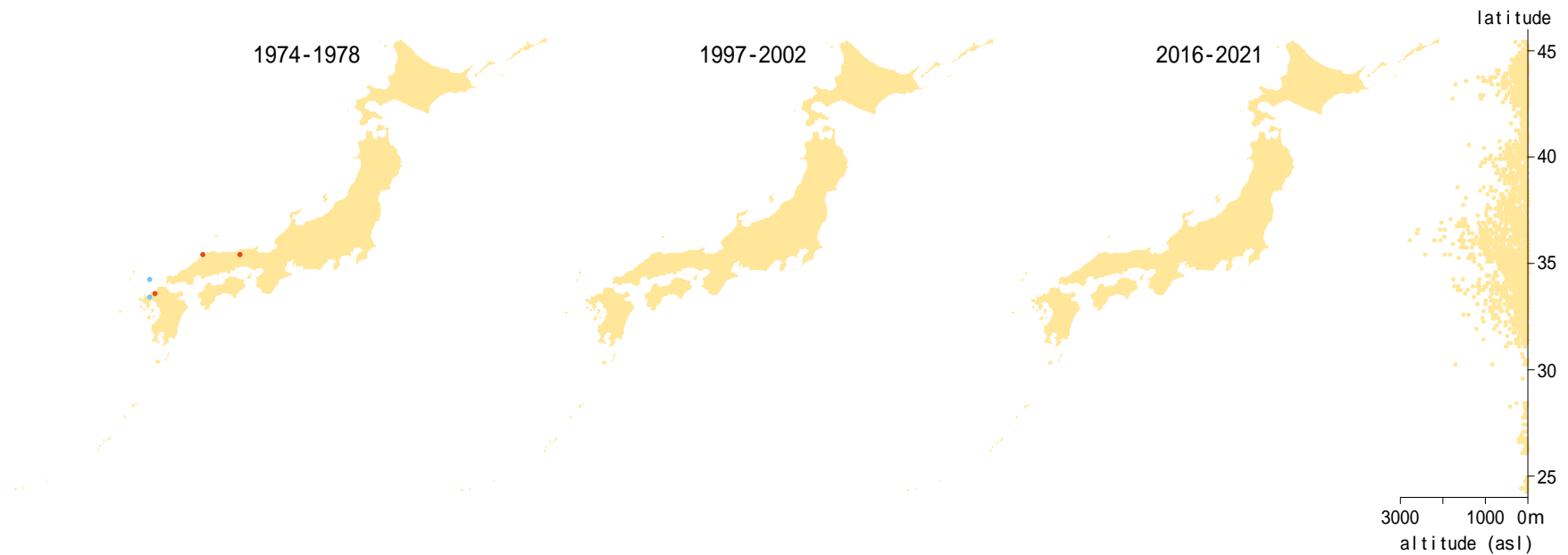
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	3	0	2
1997-2002	0	0	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



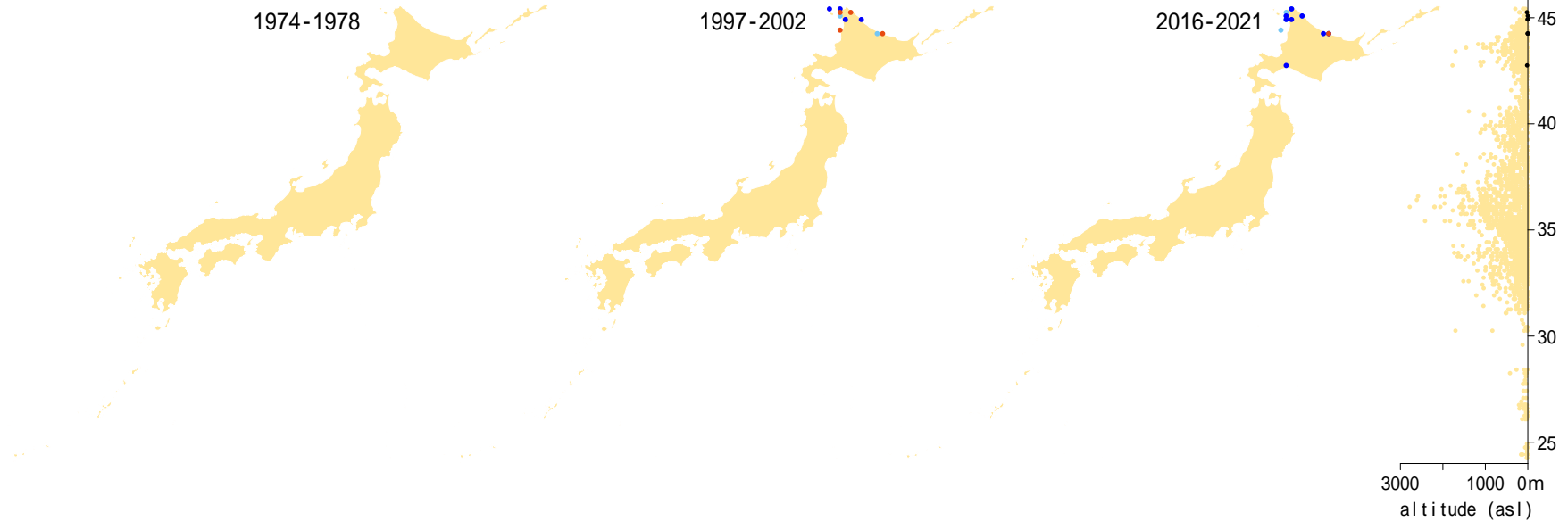
Western Yellow Wagtail

Motacilla flava

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	4	4	2
2016-2021	1	7	2

Recorded survey sites	
1997-2002	3
2016-2021	3



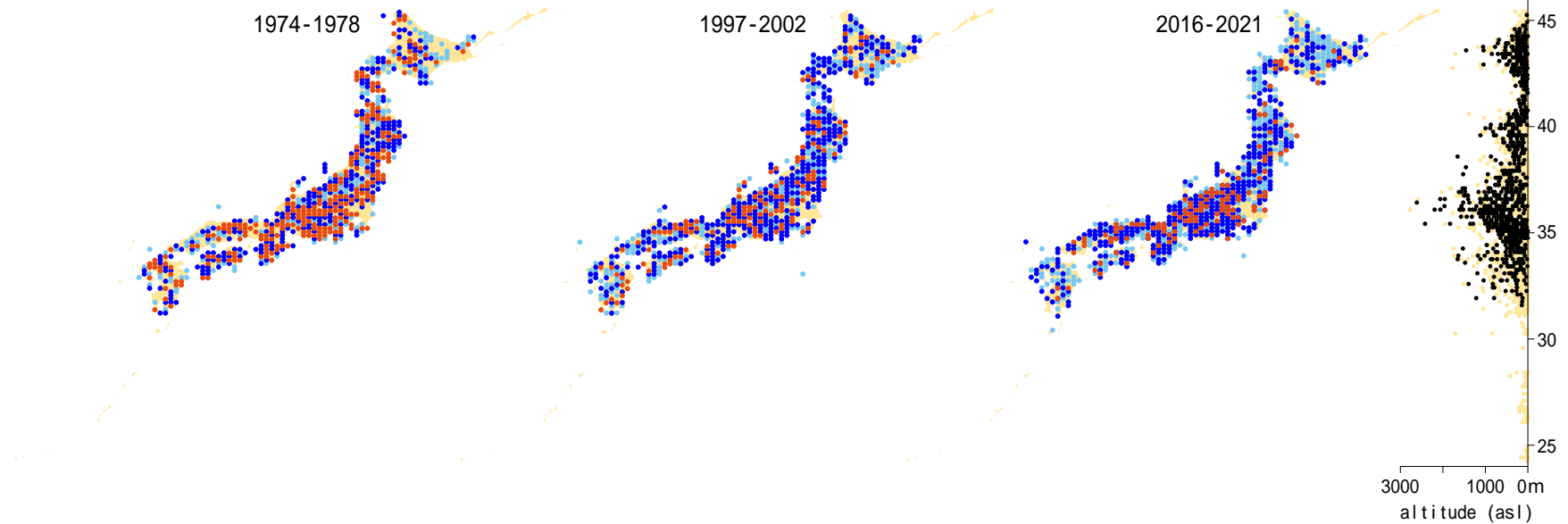
Grey Wagtail

Motacilla cinerea

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	265	276	166
1997-2002	146	391	221
2016-2021	130	375	250

Recorded survey sites	
1997-2002	835
2016-2021	754



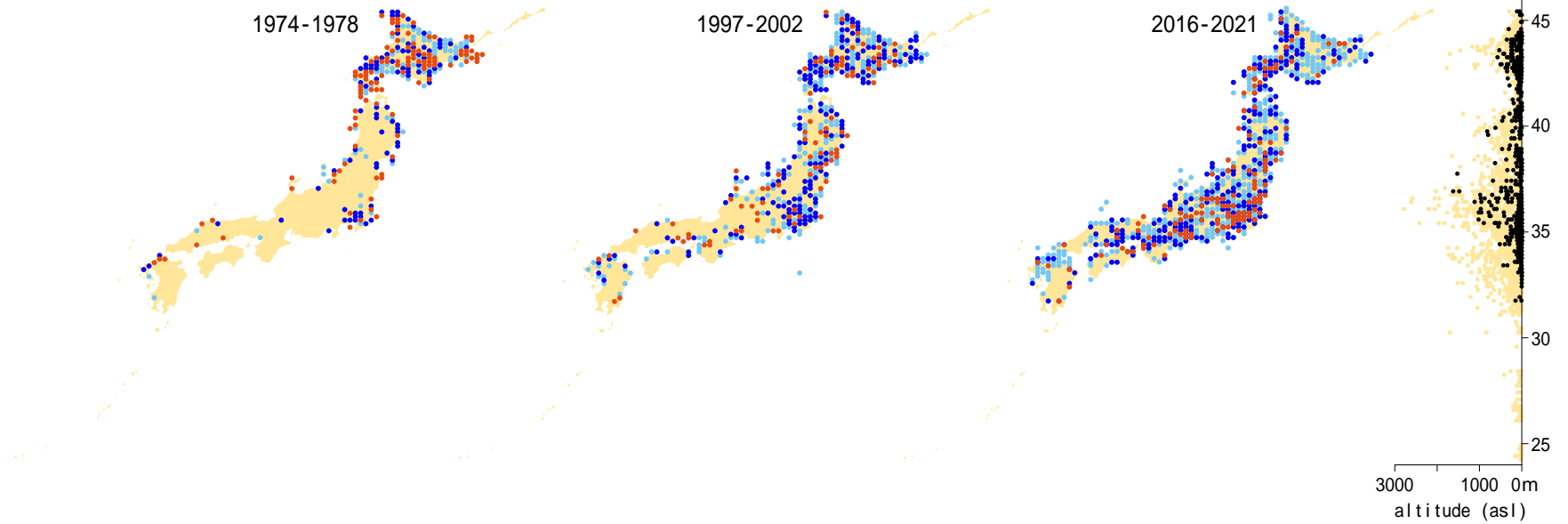
White Wagtail

Motacilla alba

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	110	89	79
1997-2002	91	184	192
2016-2021	129	225	340

Recorded survey sites	
1997-2002	433
2016-2021	478



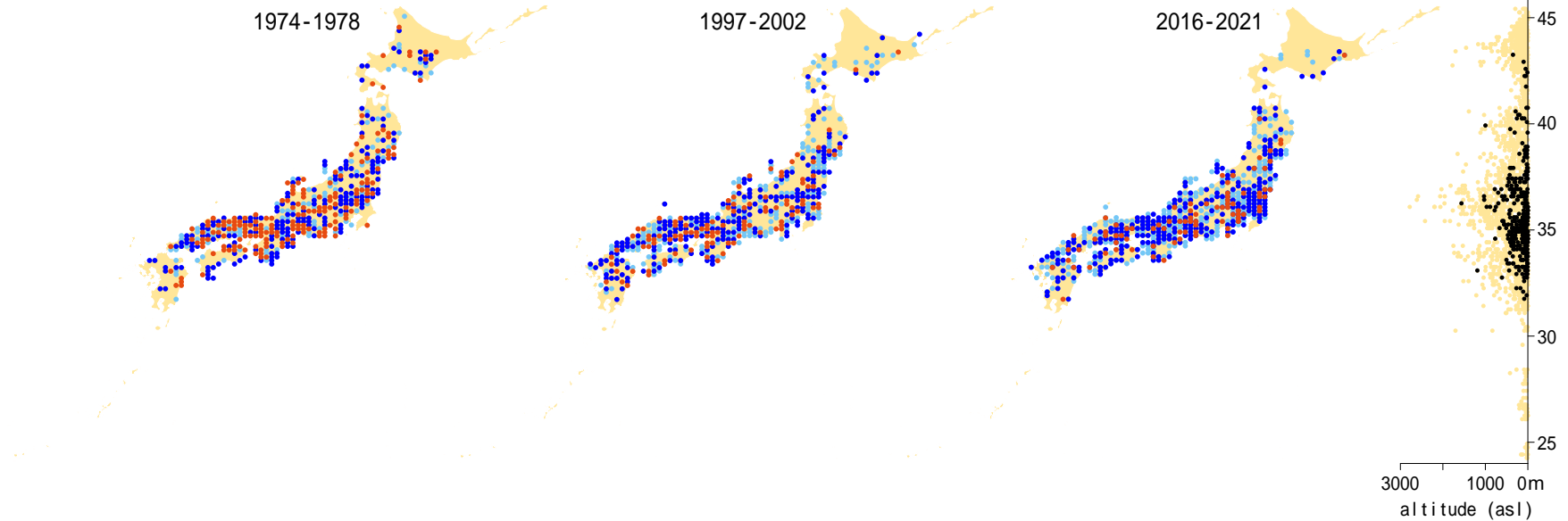
Japanese Wagtail

Motacilla grandis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	175	192	94
1997-2002	105	218	167
2016-2021	83	247	191

Recorded survey sites	
1997-2002	450
2016-2021	319



Olive-backed Pipit

Anthus hodgsoni

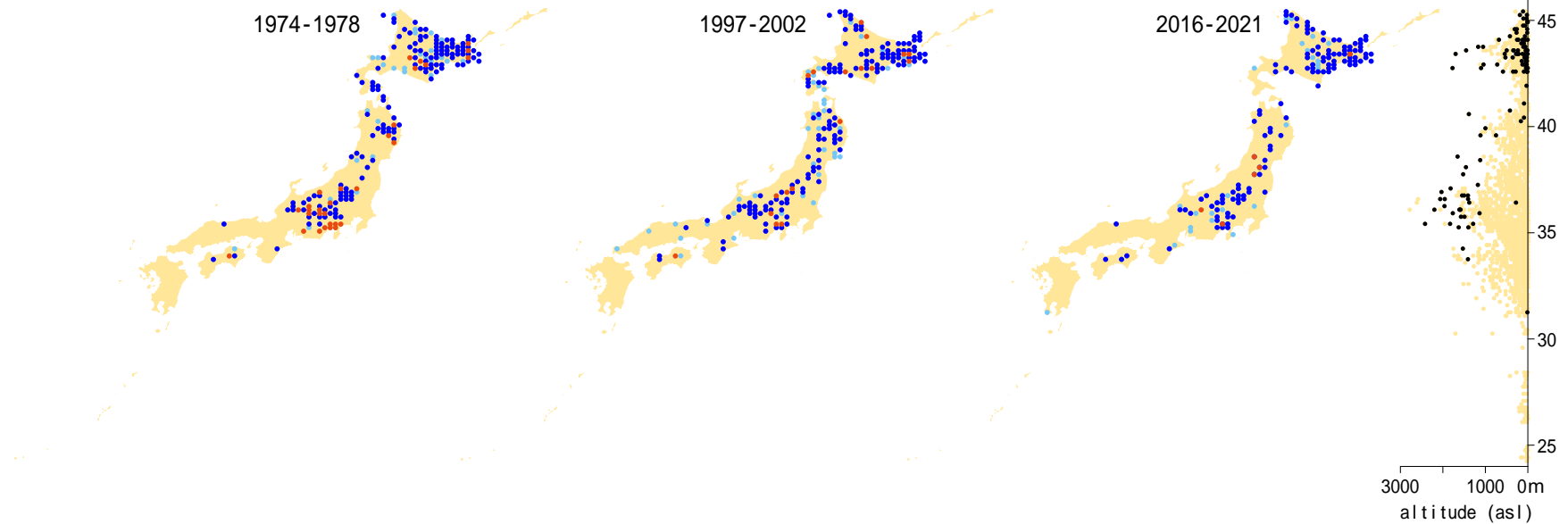
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	30	141	27
1997-2002	18	145	39
2016-2021	6	120	24

Recorded survey sites	
1997-2002	168
2016-2021	99



Altitudinal distribution
survey sites
recorded sites



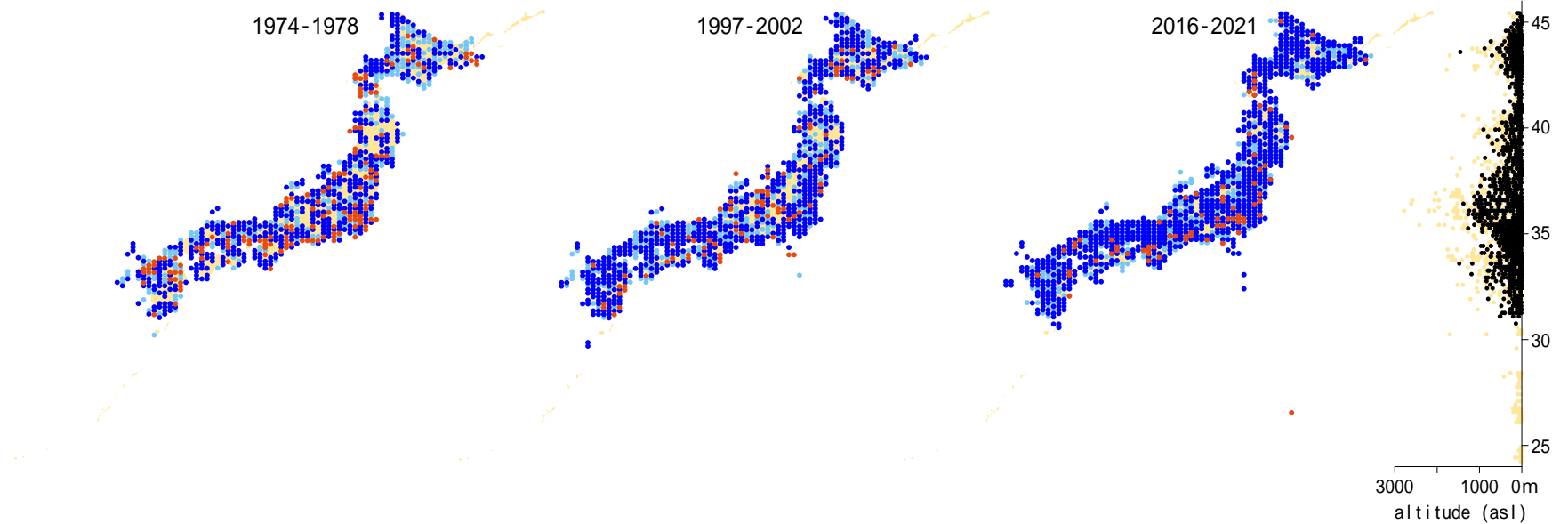
Grey-capped Greenfinch

Chloris sinica

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	148	508	231
1997-2002	87	659	242
2016-2021	72	805	173

Recorded survey sites	
1997-2002	1269
2016-2021	1293



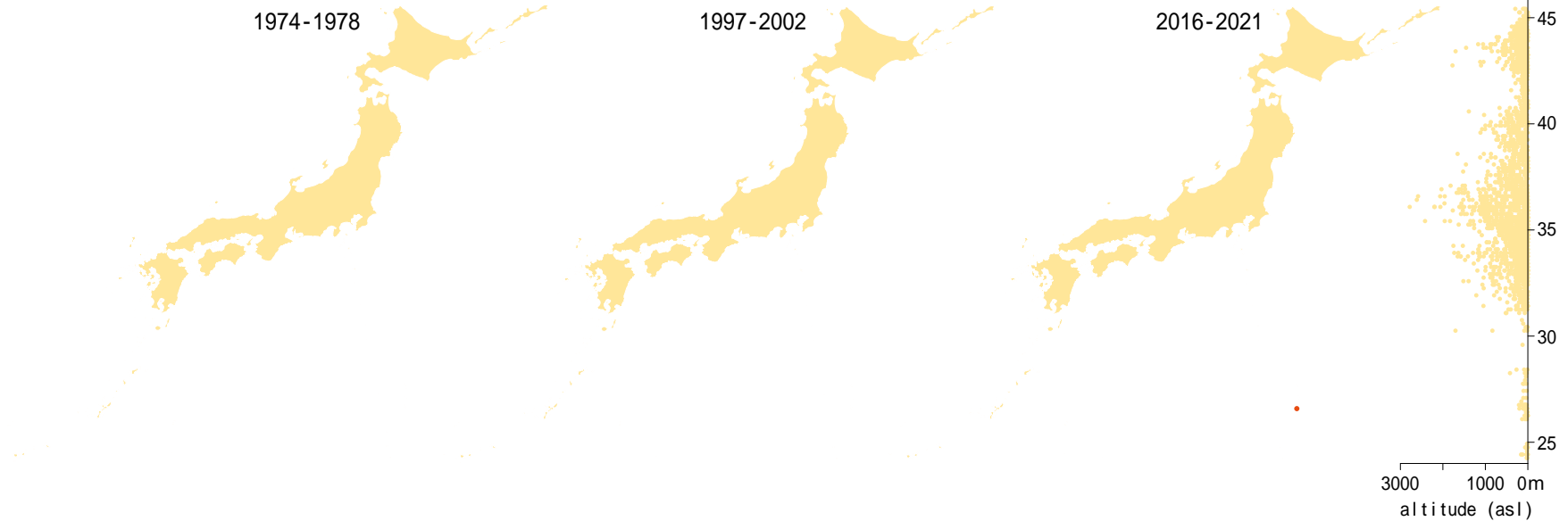
Ogasawara Greenfinch

Chloris sinica kittlitzi

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Eurasian Siskin

Carduelis spinus

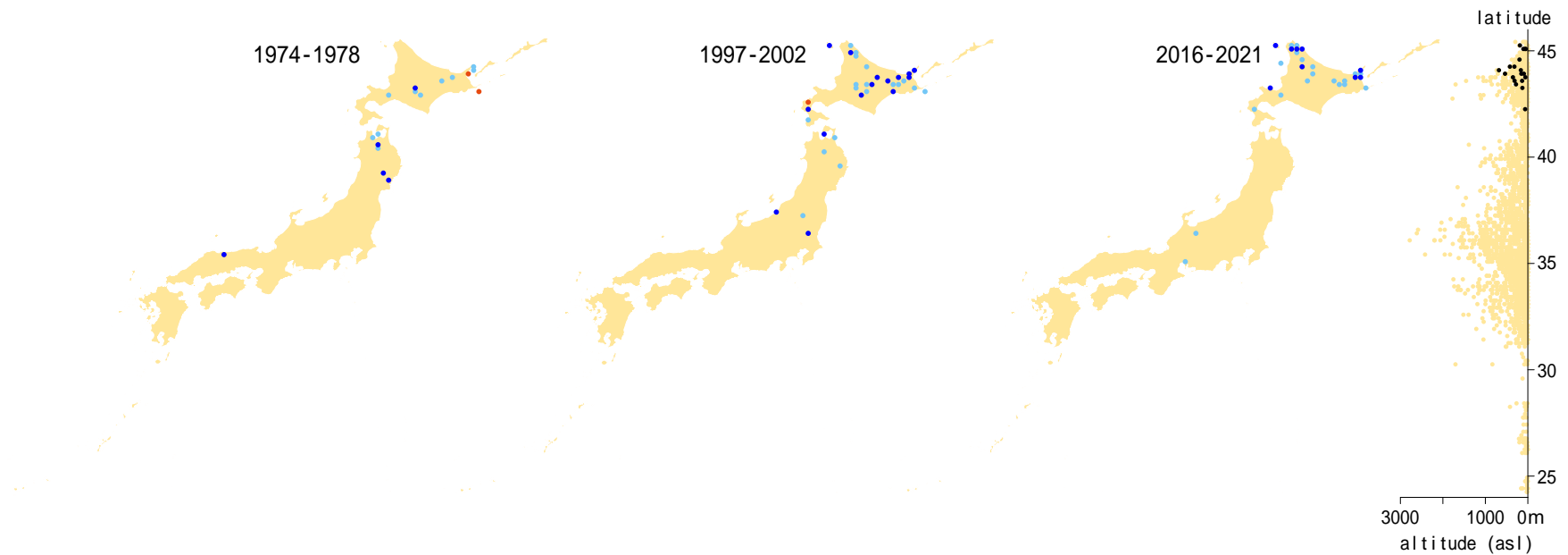
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	5	10
1997-2002	1	15	18
2016-2021	0	9	19

Recorded survey sites	
1997-2002	26
2016-2021	17



Altitudinal distribution
survey sites
recorded sites



Long-tailed Rosefinch

Uragus sibiricus

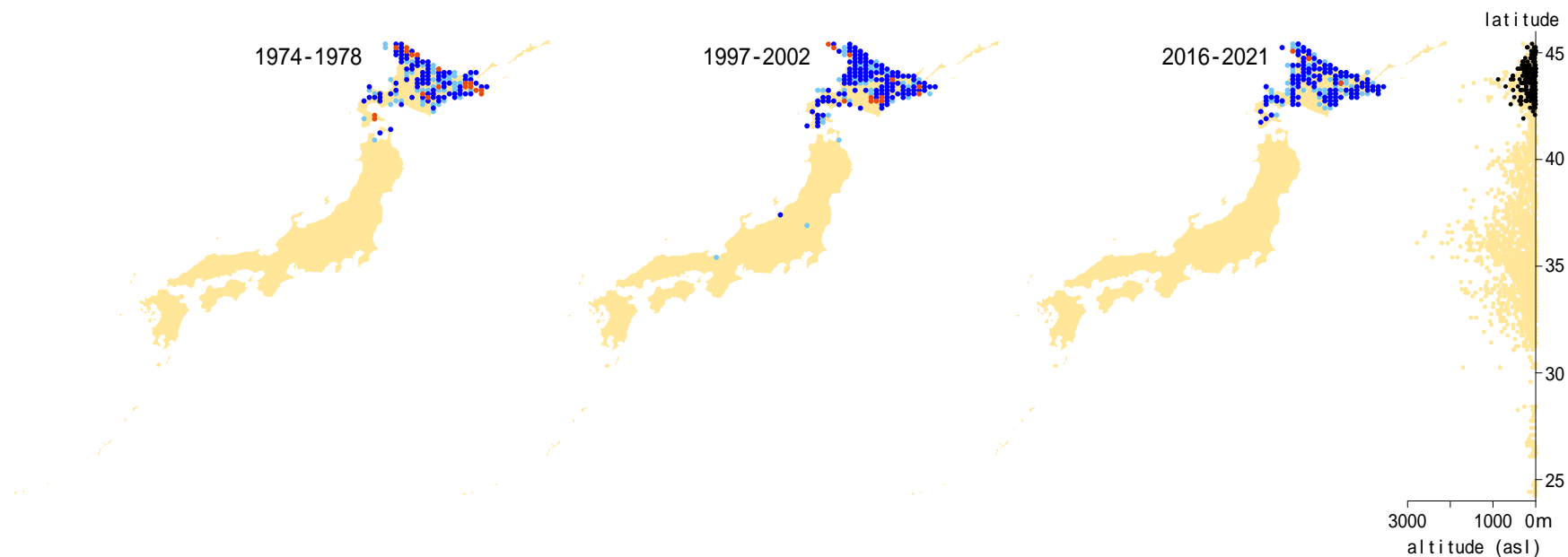
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	18	83	46
1997-2002	12	121	34
2016-2021	3	108	41

Recorded survey sites	
1997-2002	173
2016-2021	159



Altitudinal distribution
survey sites
recorded sites



Pine Grosbeak

Pinicola enucleator

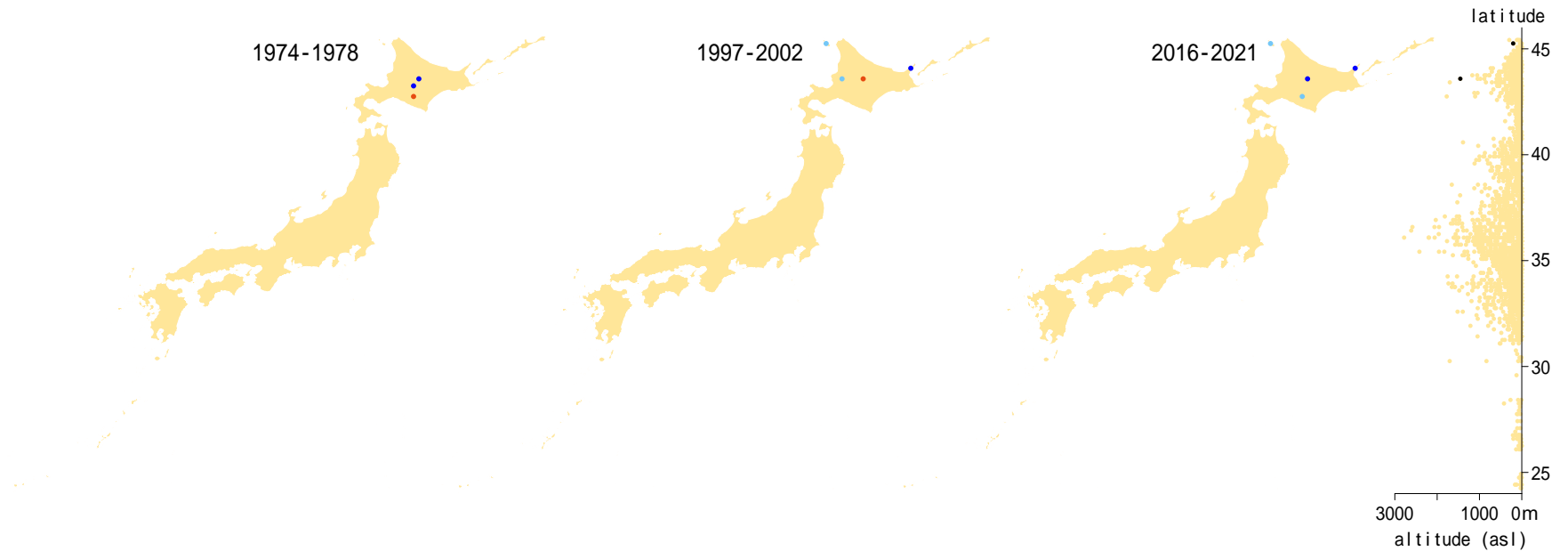
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	2	0
1997-2002	1	1	2
2016-2021	0	2	2

Recorded survey sites	
1997-2002	3
2016-2021	2



Altitudinal distribution
survey sites
recorded sites



Red Crossbill

Loxia curvirostra

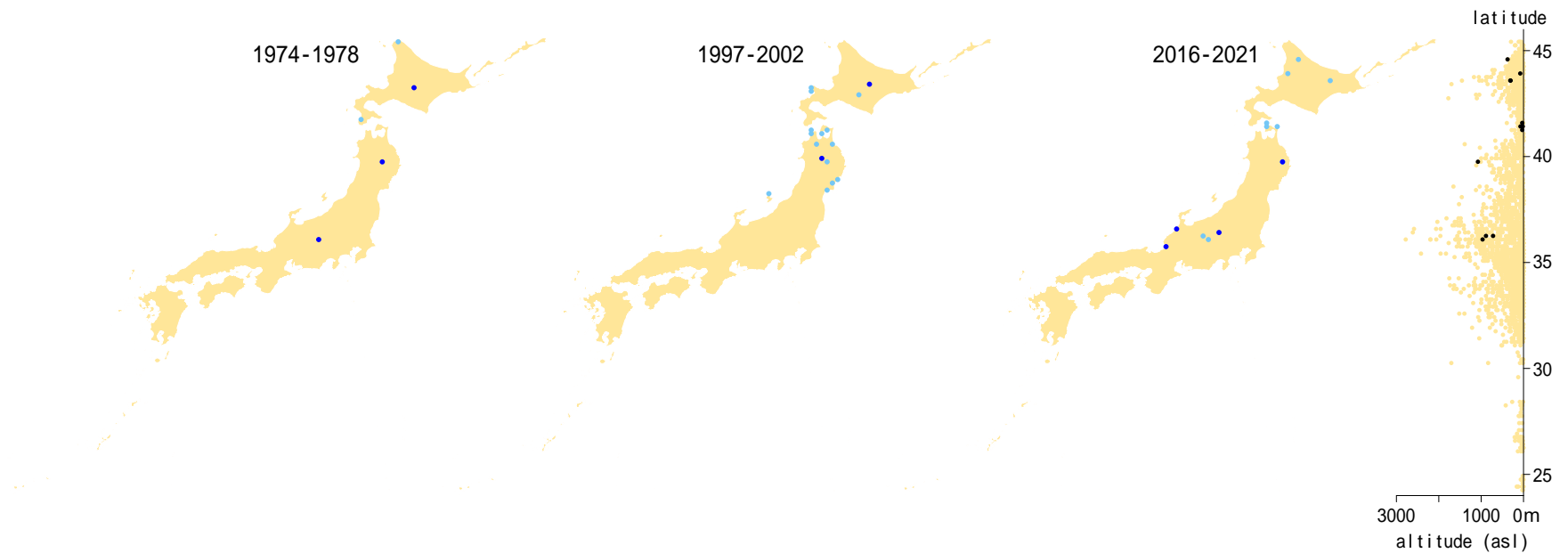
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	3	2
1997-2002	0	2	14
2016-2021	0	4	8

Recorded survey sites	
1997-2002	15
2016-2021	10



Altitudinal distribution
survey sites
recorded sites



Eurasian Bullfinch

Pyrrhula pyrrhula

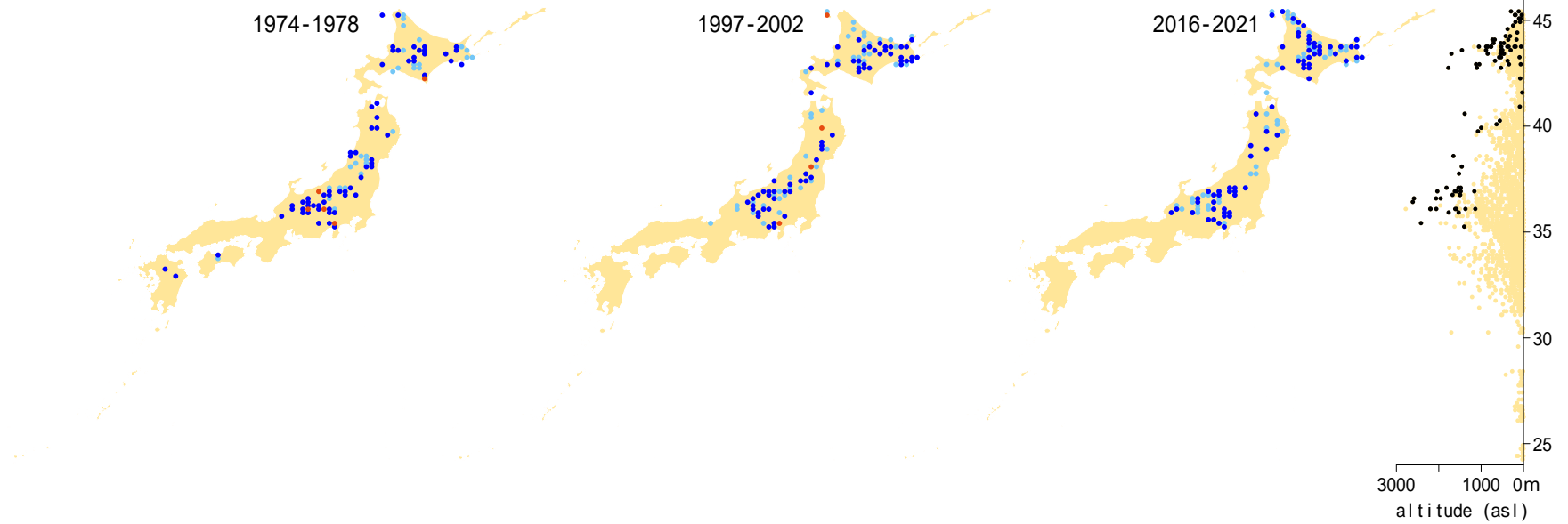
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	5	65	29
1997-2002	4	63	44
2016-2021	0	69	47

Recorded survey sites	
1997-2002	95
2016-2021	80



Altitudinal distribution
survey sites
recorded sites



Hawfinch

Coccothraustes coccothraustes

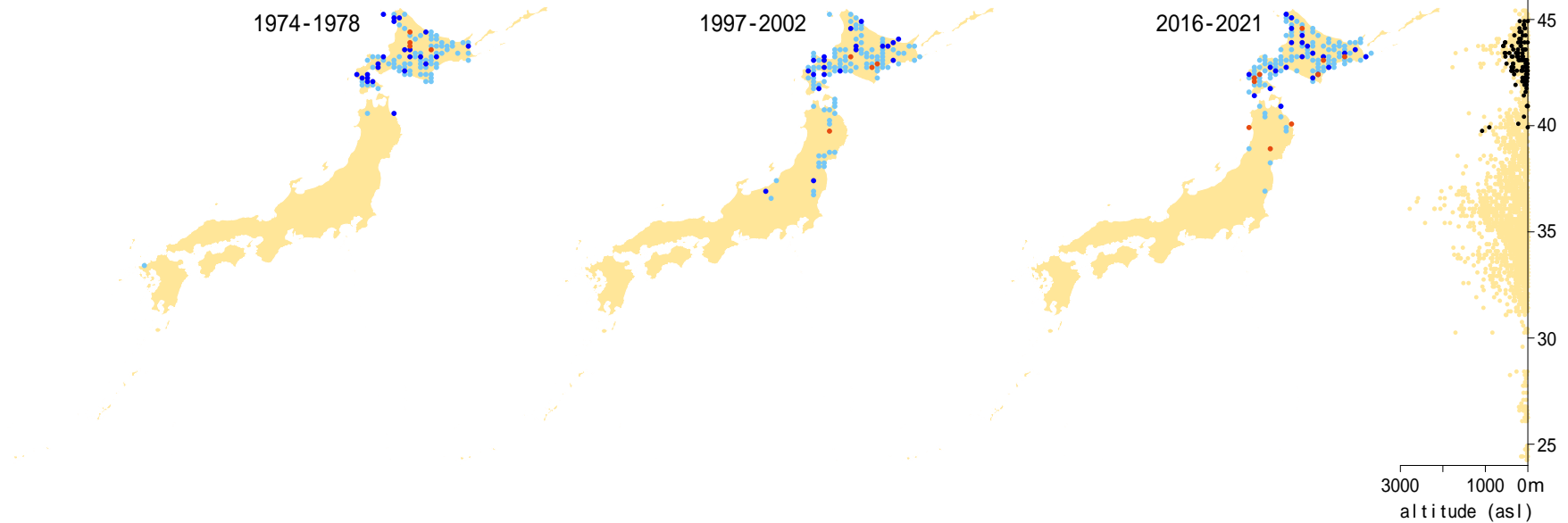
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	4	23	71
1997-2002	4	20	97
2016-2021	10	22	98

Recorded survey sites	
1997-2002	98
2016-2021	95



Altitudinal distribution
survey sites
recorded sites



Chinese Grosbeak

Eophona migratoria

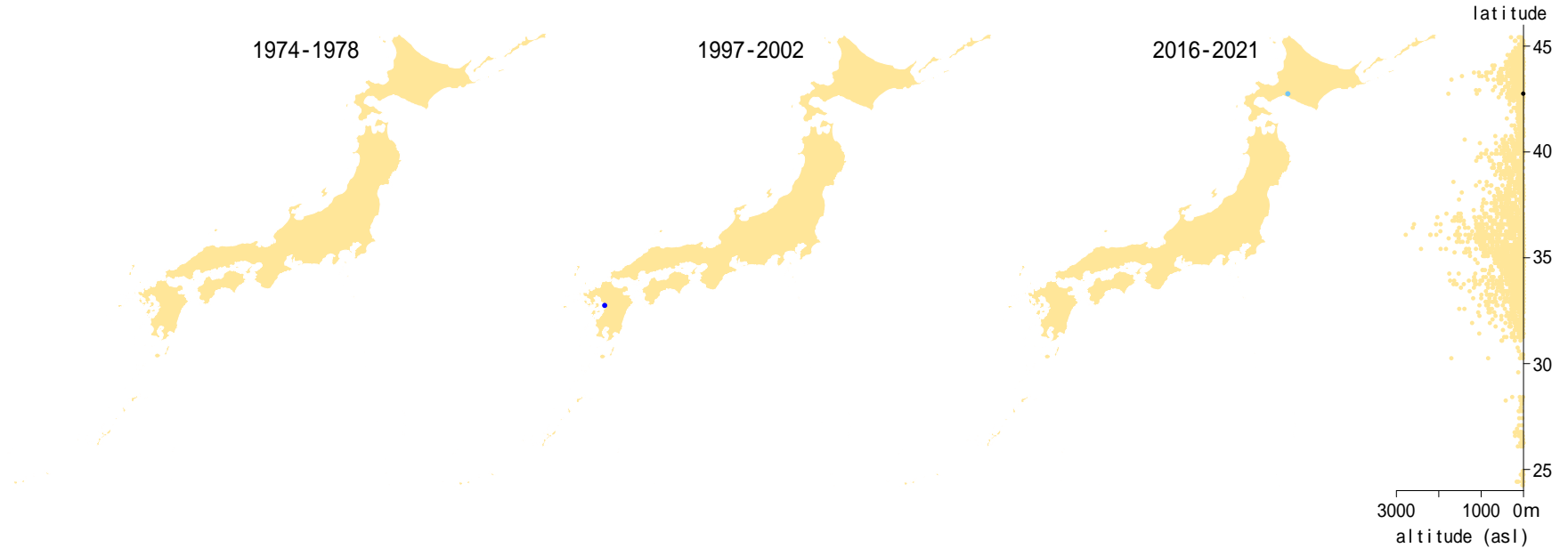
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	1	0
2016-2021	0	0	1

Recorded survey sites	
1997-2002	0
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



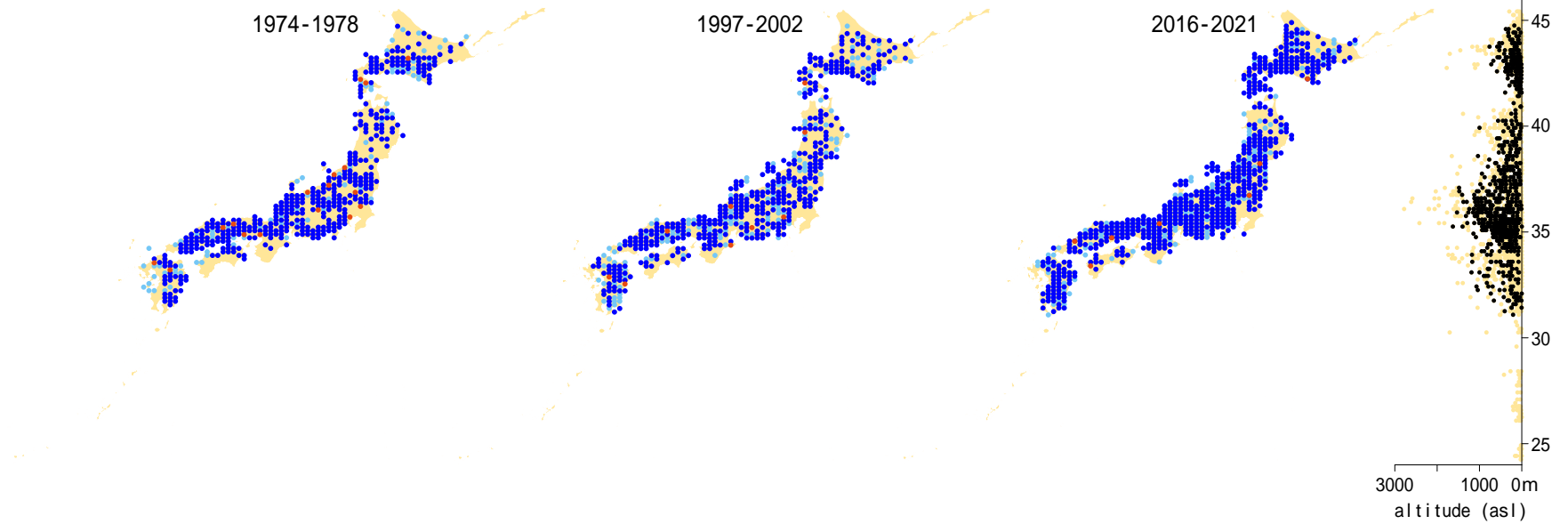
Japanese Grosbeak

Eophona personata

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	17	417	77
1997-2002	9	424	122
2016-2021	7	592	91

Recorded survey sites	
1997-2002	537
2016-2021	667



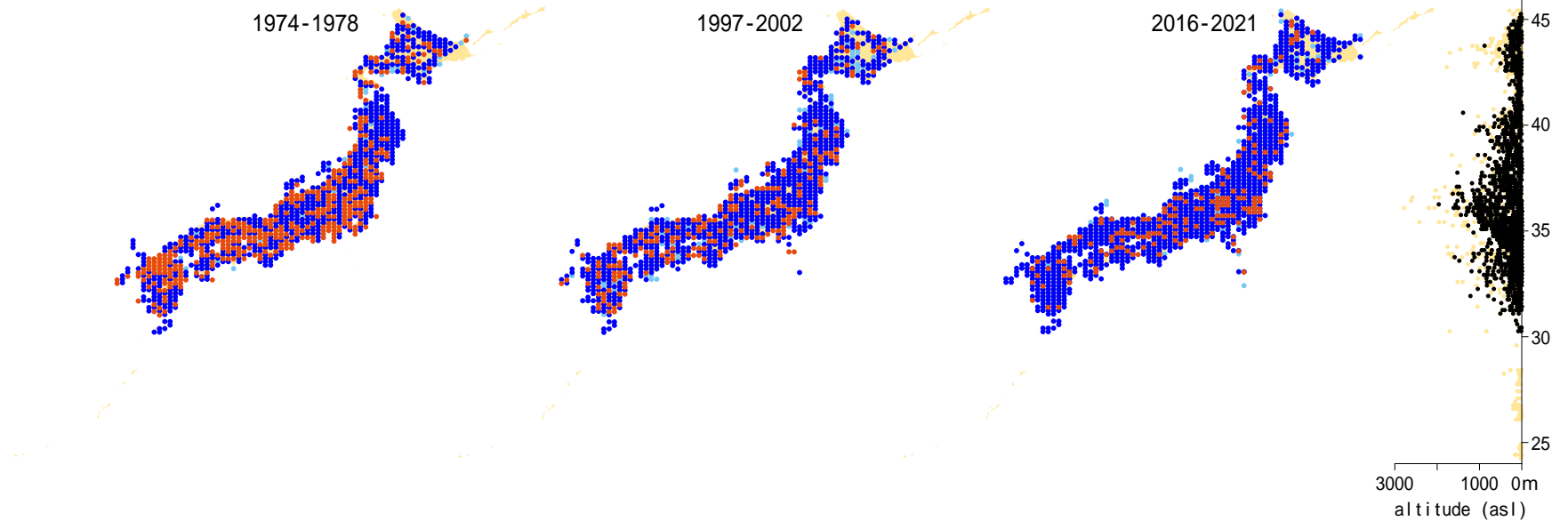
Meadow Bunting

Emberiza cioides

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	383	624	28
1997-2002	221	753	62
2016-2021	178	849	31

Recorded survey sites	
1997-2002	1452
2016-2021	1402



Chestnut-eared Bunting

Emberiza fucata

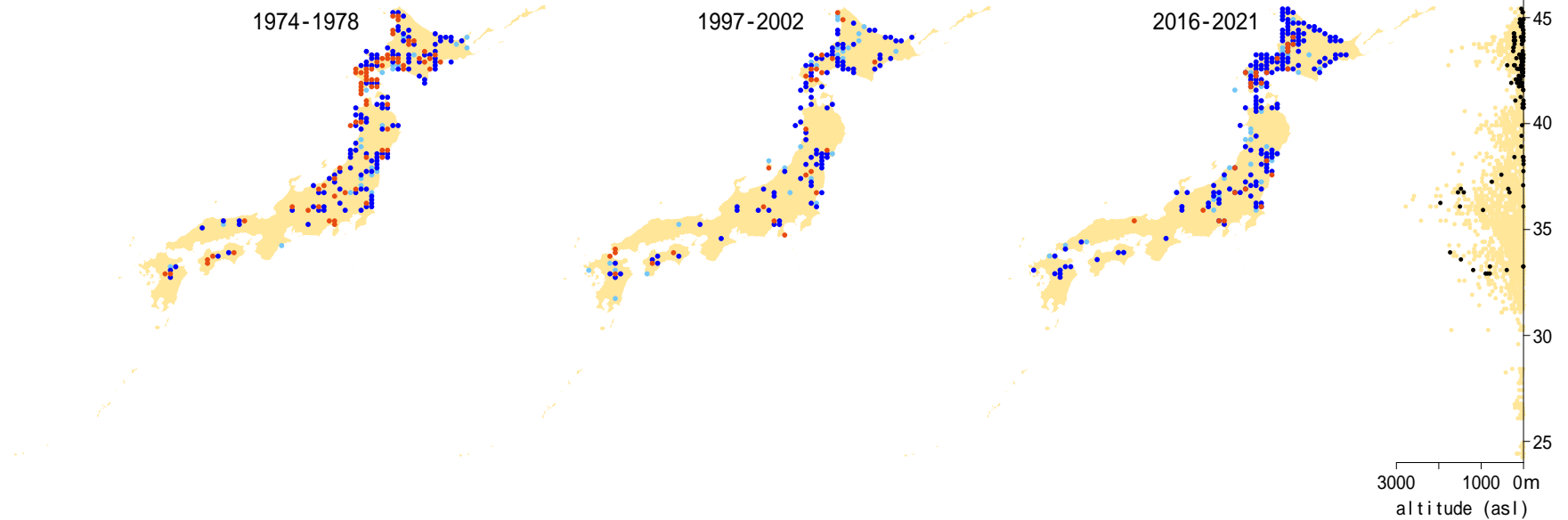
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	73	123	23
1997-2002	26	93	26
2016-2021	24	154	28

Recorded survey sites	
1997-2002	99
2016-2021	115



Altitudinal distribution
survey sites
recorded sites



Yellow-throated Bunting

Emberiza elegans

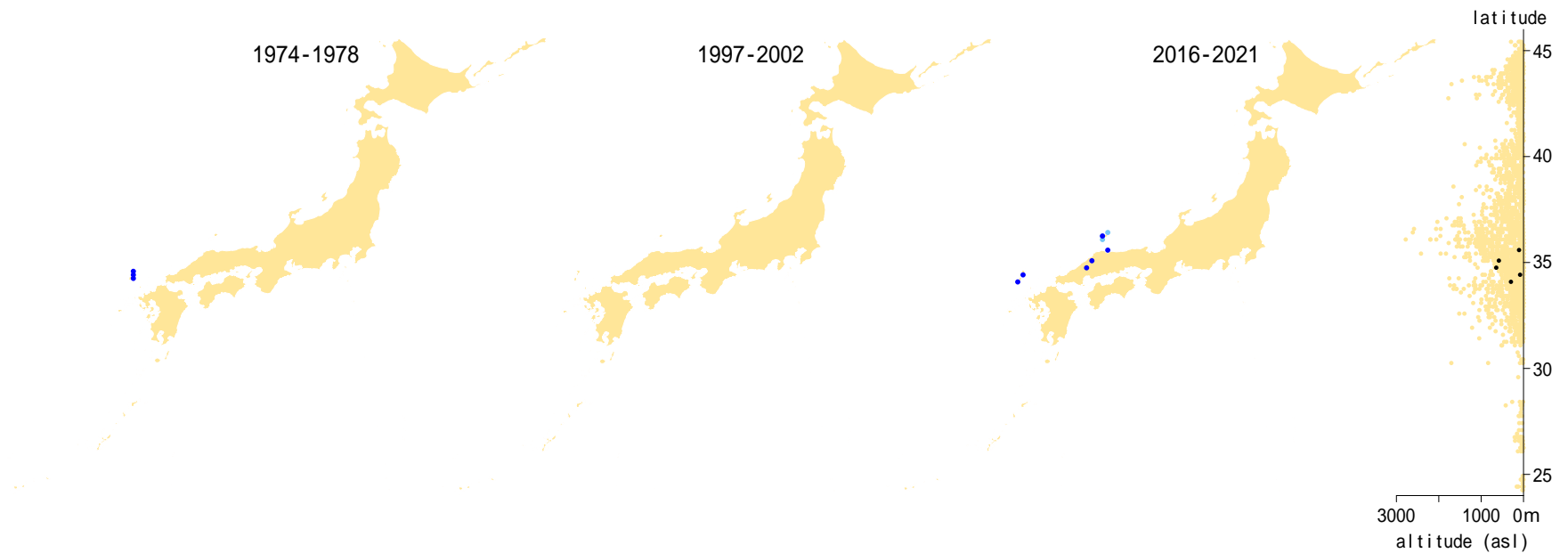
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	3	0
1997-2002	0	0	0
2016-2021	0	6	2

Recorded survey sites	
1997-2002	0
2016-2021	4



Altitudinal distribution
survey sites
recorded sites



Yellow-breasted Bunting

Emberiza aureola

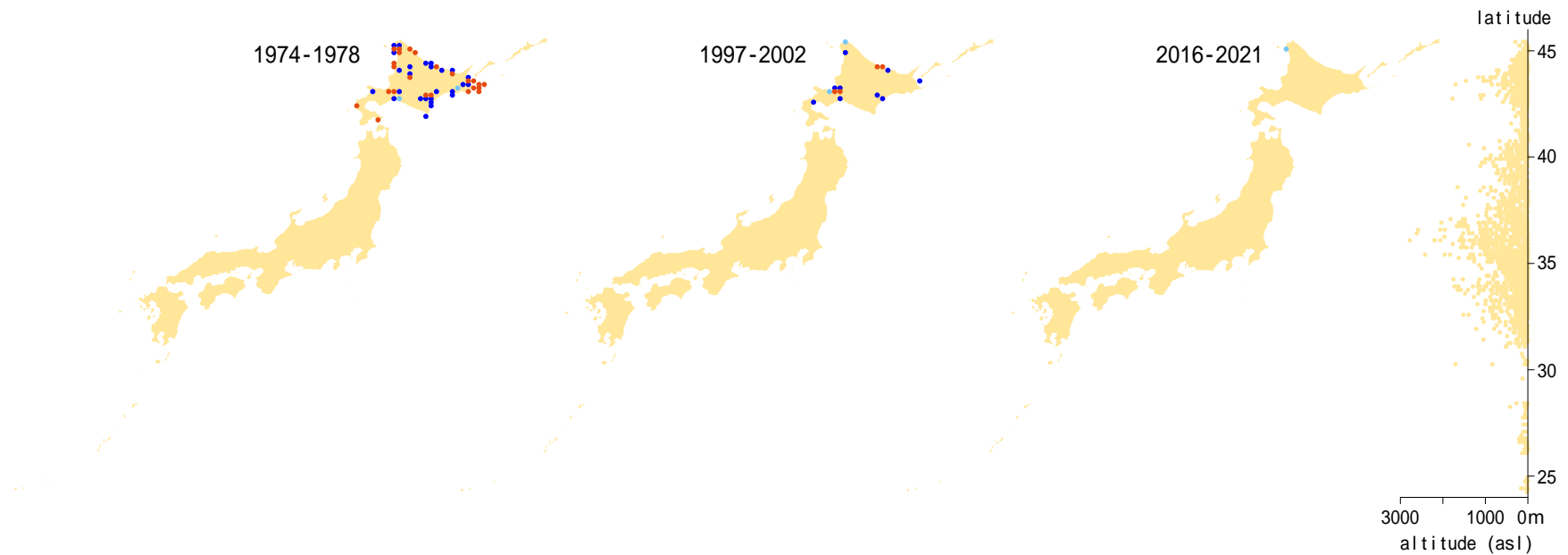
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	24	26	2
1997-2002	4	9	2
2016-2021	0	0	1

Recorded survey sites	
1997-2002	5
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Yellow Bunting

Emberiza sulphurata

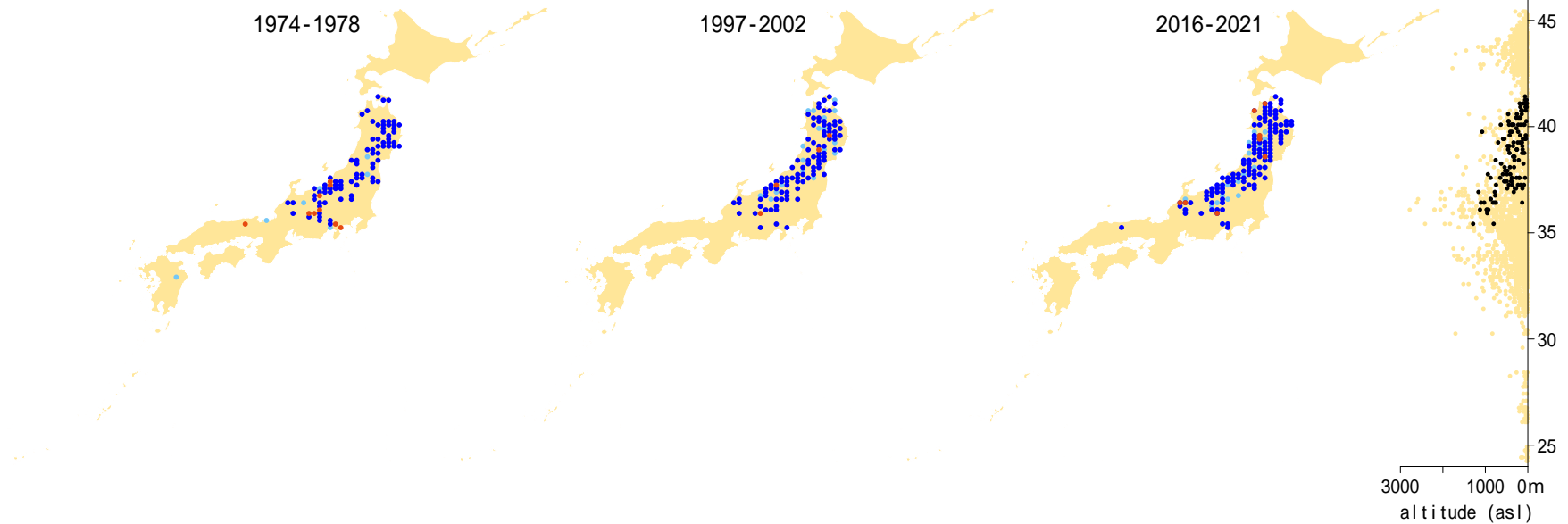
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	9	80	7
1997-2002	4	94	18
2016-2021	8	118	17

Recorded survey sites	
1997-2002	78
2016-2021	97



Altitudinal distribution
survey sites
recorded sites



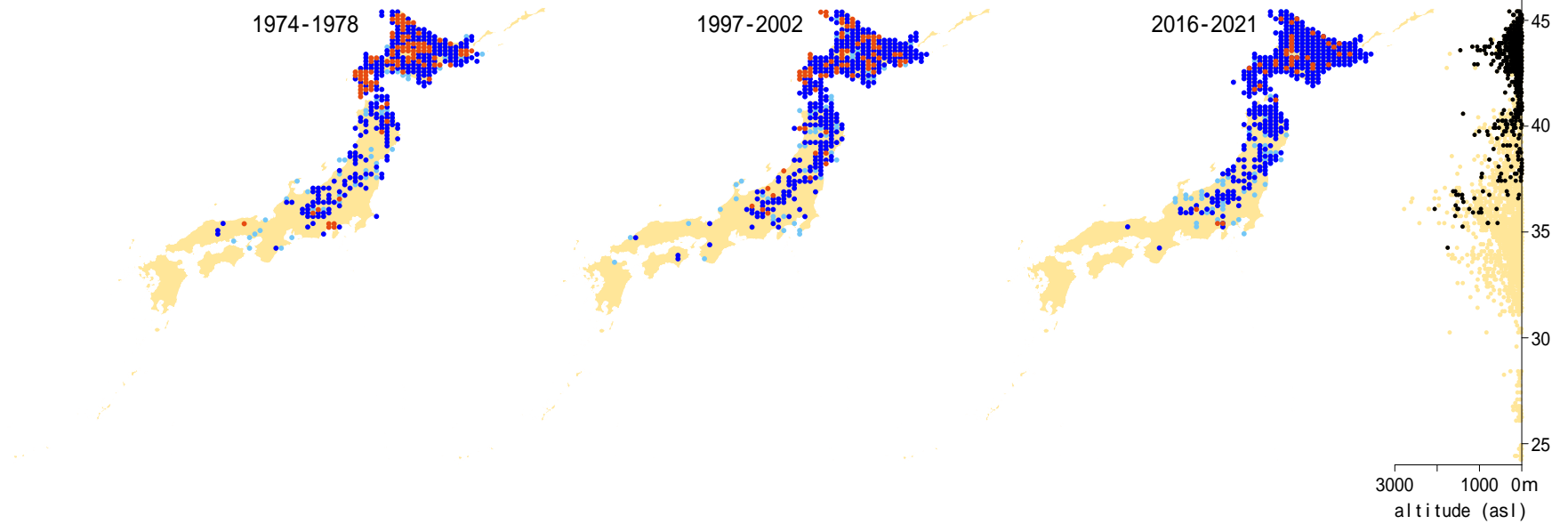
Black-faced Bunting

Emberiza spodocephala

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	93	268	44
1997-2002	72	320	49
2016-2021	38	354	42

Recorded survey sites	
1997-2002	558
2016-2021	508



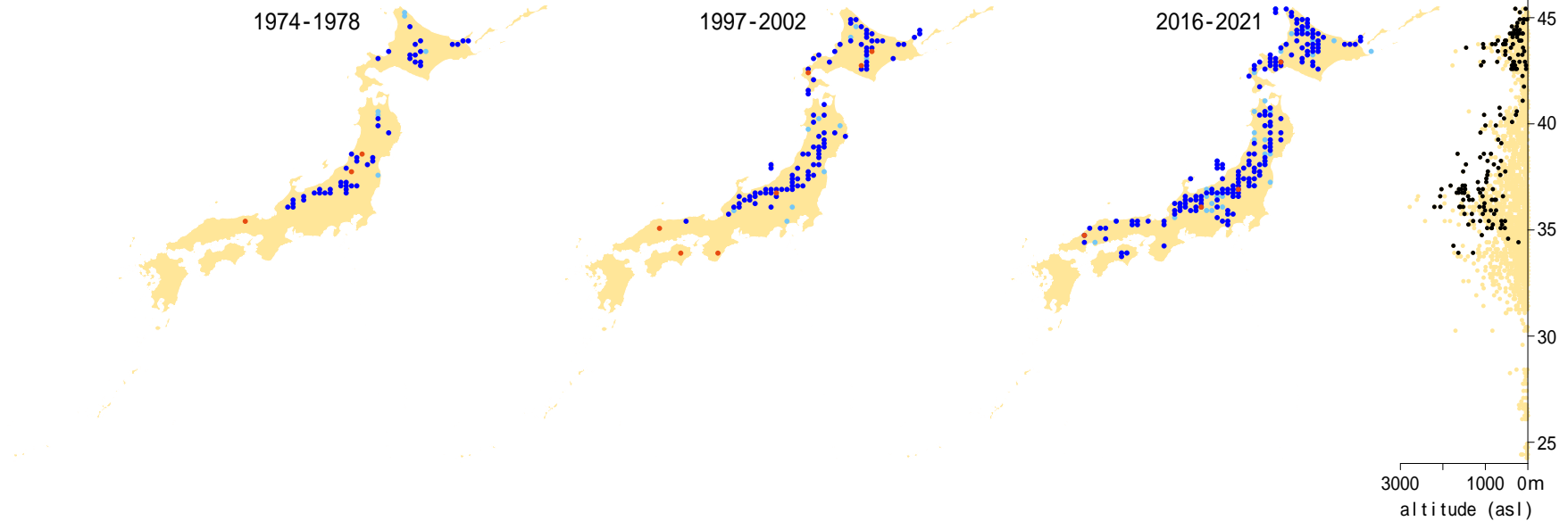
Grey Bunting

Emberiza variabilis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	3	46	6
1997-2002	7	94	10
2016-2021	4	170	28

Recorded survey sites
1997-2002 87
2016-2021 139



Japanese Reed Bunting

Emberiza yessoensis

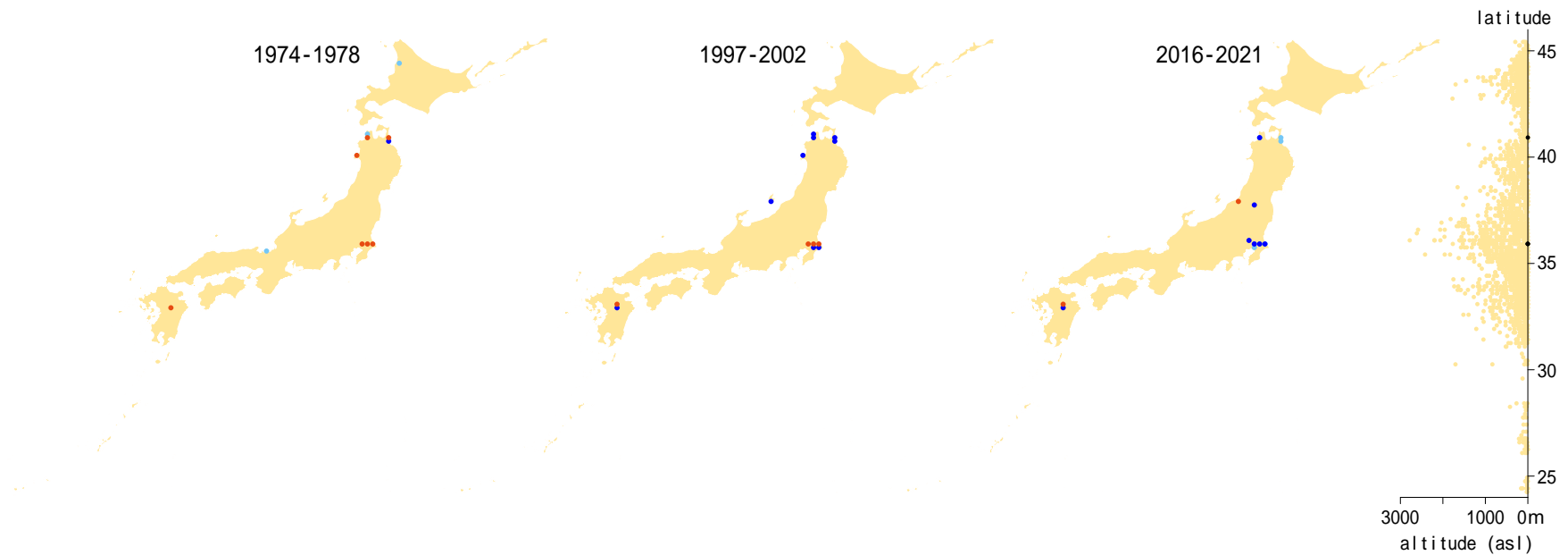
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	
	A B C
1974-1978	7 1 3
1997-2002	4 9 0
2016-2021	2 7 3

Recorded survey sites	
1997-2002	8
2016-2021	4



Altitudinal distribution
survey sites
recorded sites



Common Reed Bunting

Emberiza schoeniclus

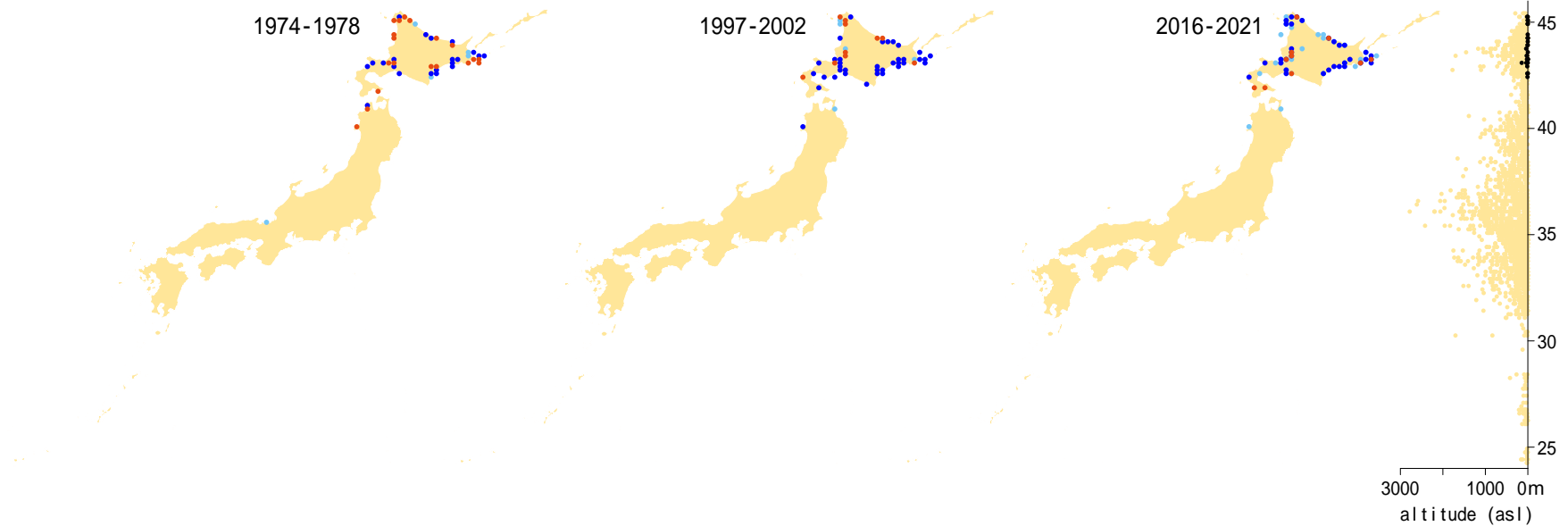
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	19	21	5
1997-2002	10	36	5
2016-2021	10	26	15

Recorded survey sites	
1997-2002	34
2016-2021	25



Altitudinal distribution
survey sites
recorded sites



Chinese Bamboo Partridge

Bambusicola thoracicus

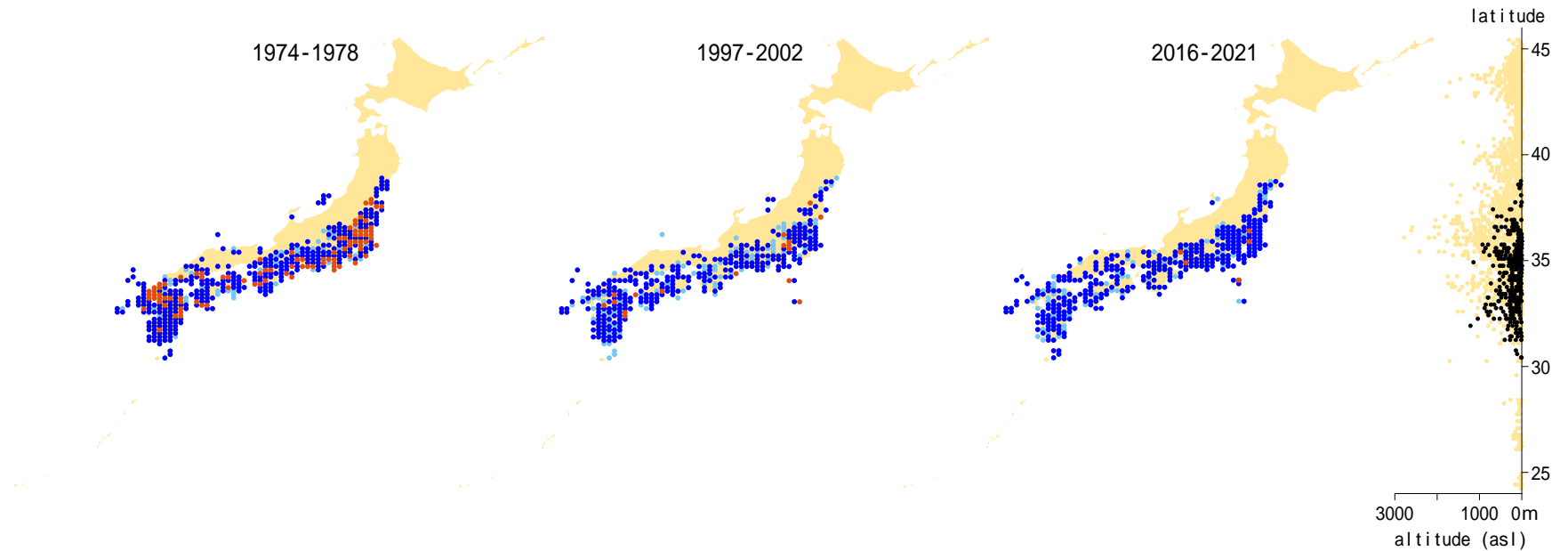
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	94	325	42
1997-2002	18	289	81
2016-2021	5	330	57

Recorded survey sites	
1997-2002	384
2016-2021	335



Altitudinal distribution
survey sites
recorded sites



Indian Peafowl

Pavo cristatus

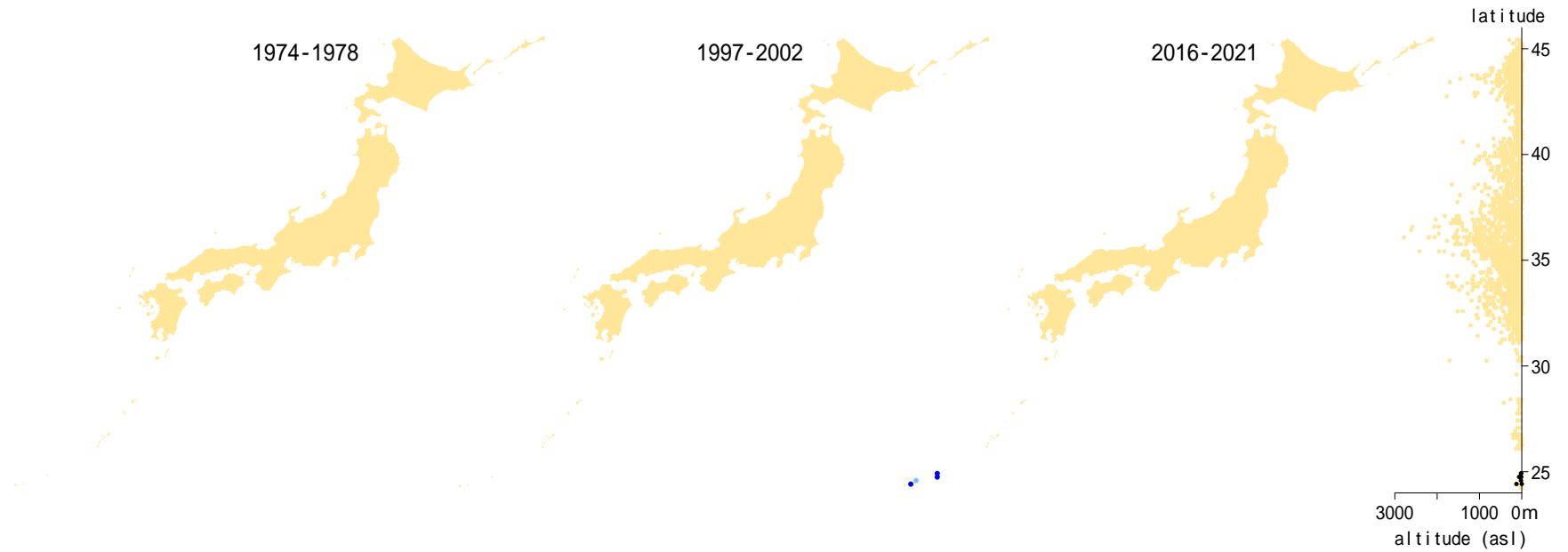
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	3	1

Recorded survey sites	
1997-2002	0
2016-2021	9



Altitudinal distribution
survey sites
recorded sites



Northern Bobwhite

Colinus virginianus

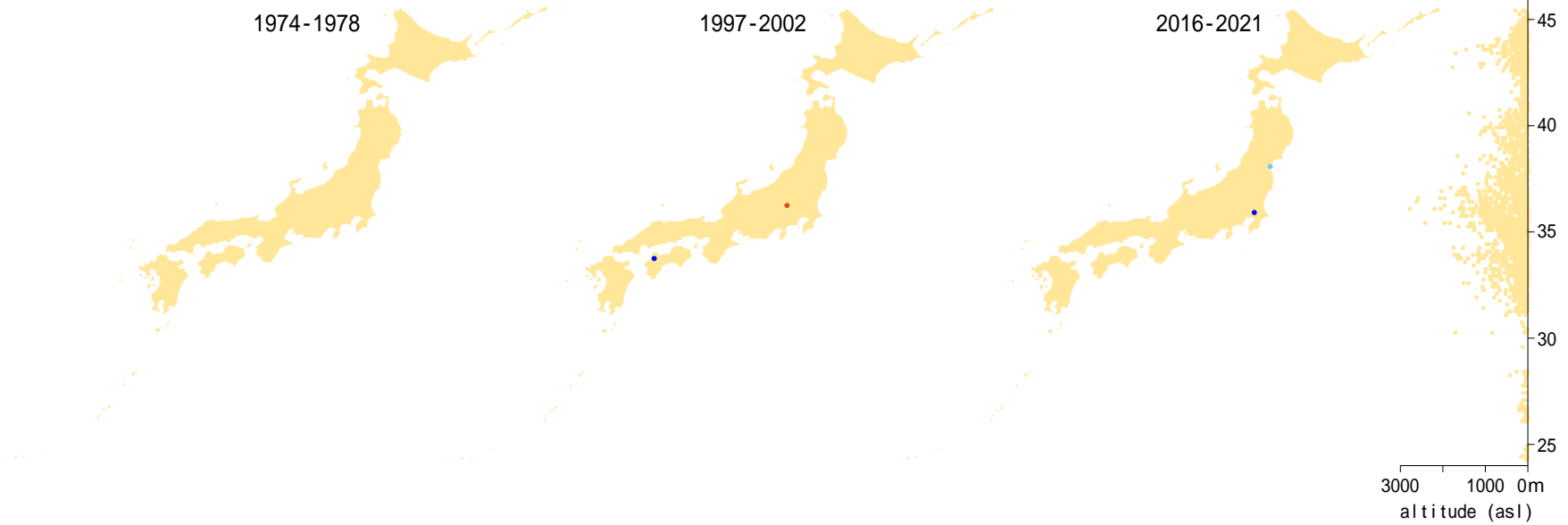
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	0	0	0
1997-2002	1	1	0
2016-2021	0	1	1

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



Black Swan

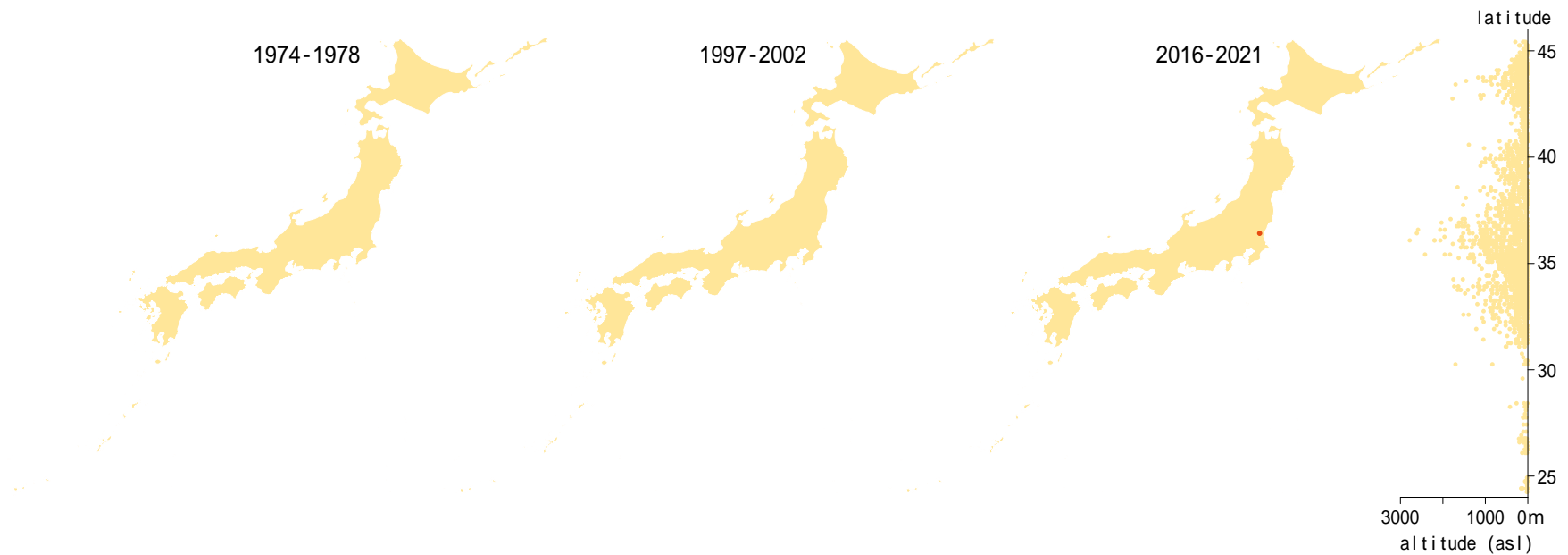
Cygnus atratus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0

Altitudinal distribution
survey sites
recorded sites



Mute Swan

Cygnus olor

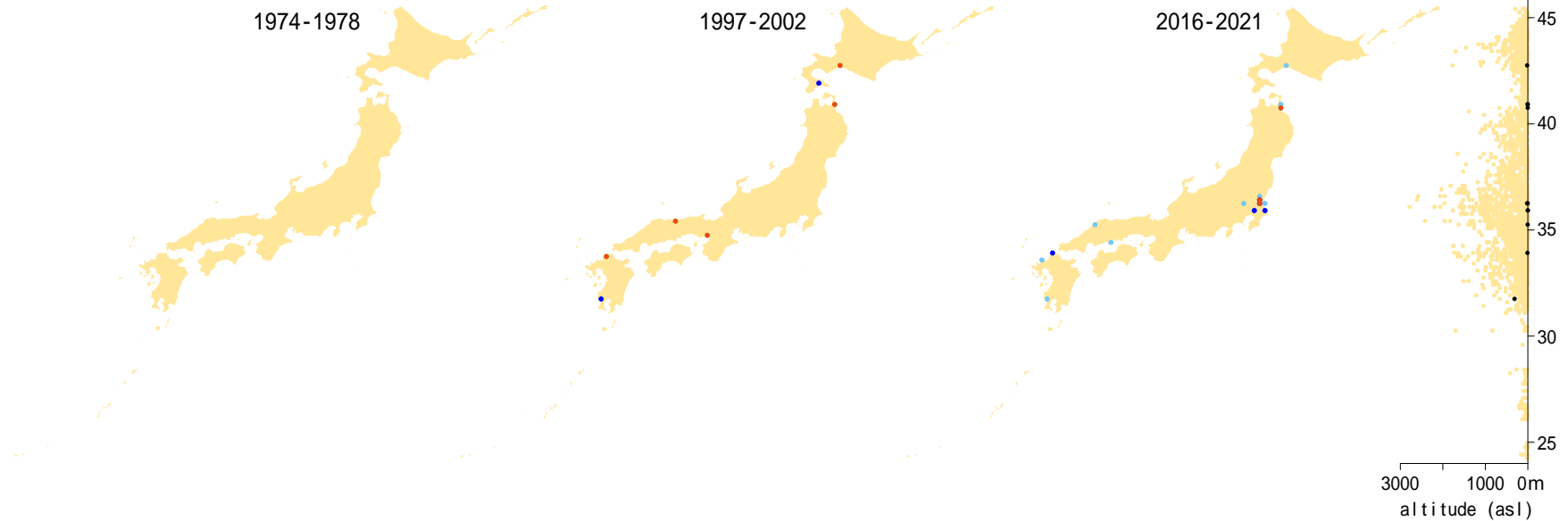
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	5	2	0
2016-2021	3	3	9

Recorded survey sites	
1997-2002	3
2016-2021	8



Altitudinal distribution
survey sites
recorded sites



Rock Dove

Columba livia

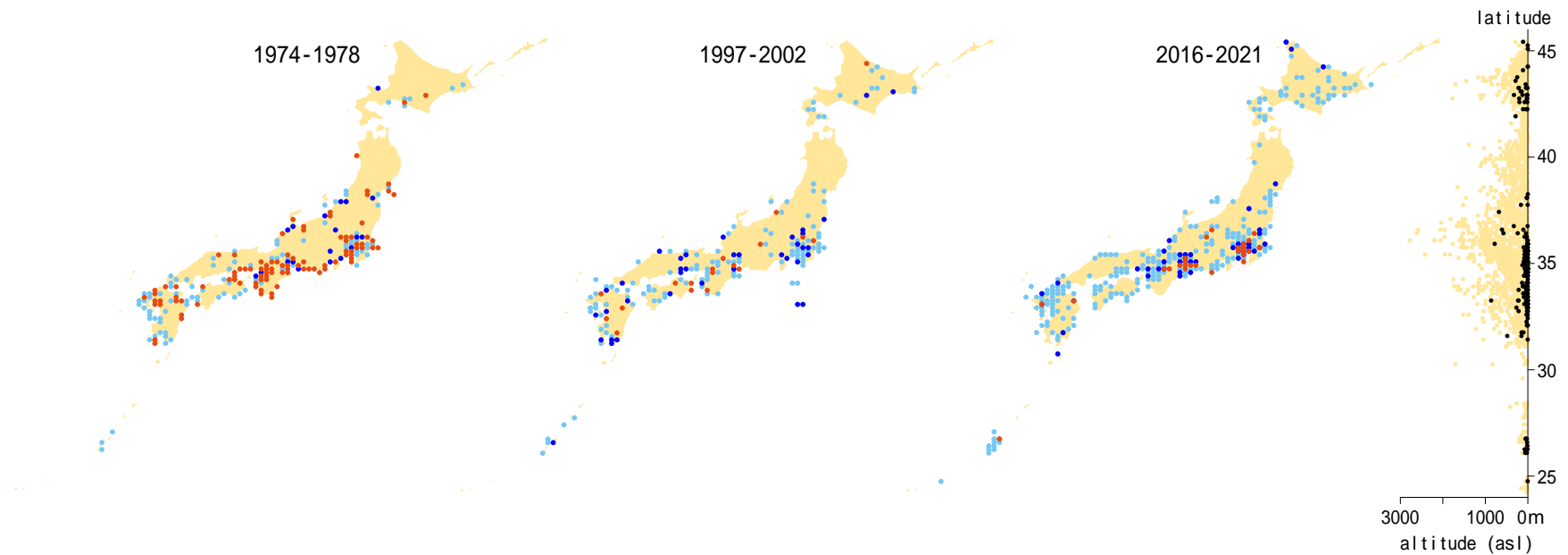
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	97	19	91
1997-2002	18	37	119
2016-2021	26	34	240

Recorded survey sites	
1997-2002	159
2016-2021	191



Altitudinal distribution
survey sites
recorded sites



Eurasian Collared Dove

Streptopelia decaocto

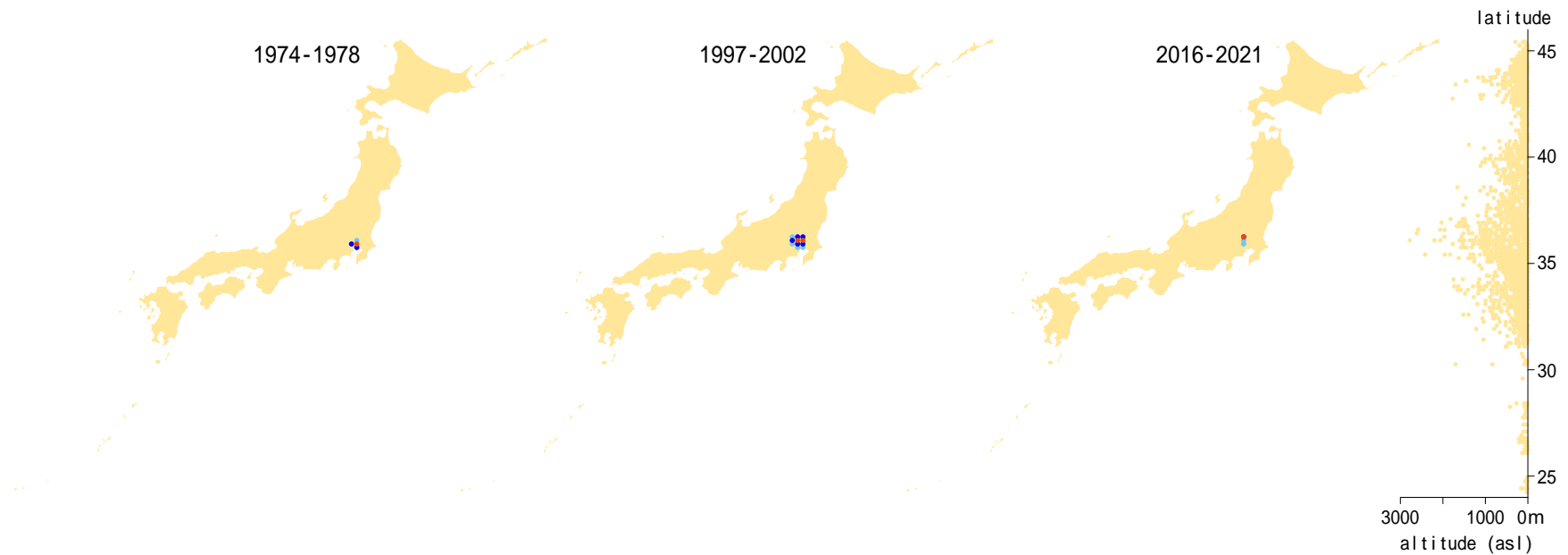
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	2	1
1997-2002	2	5	4
2016-2021	1	0	3

Recorded survey sites	
1997-2002	4
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



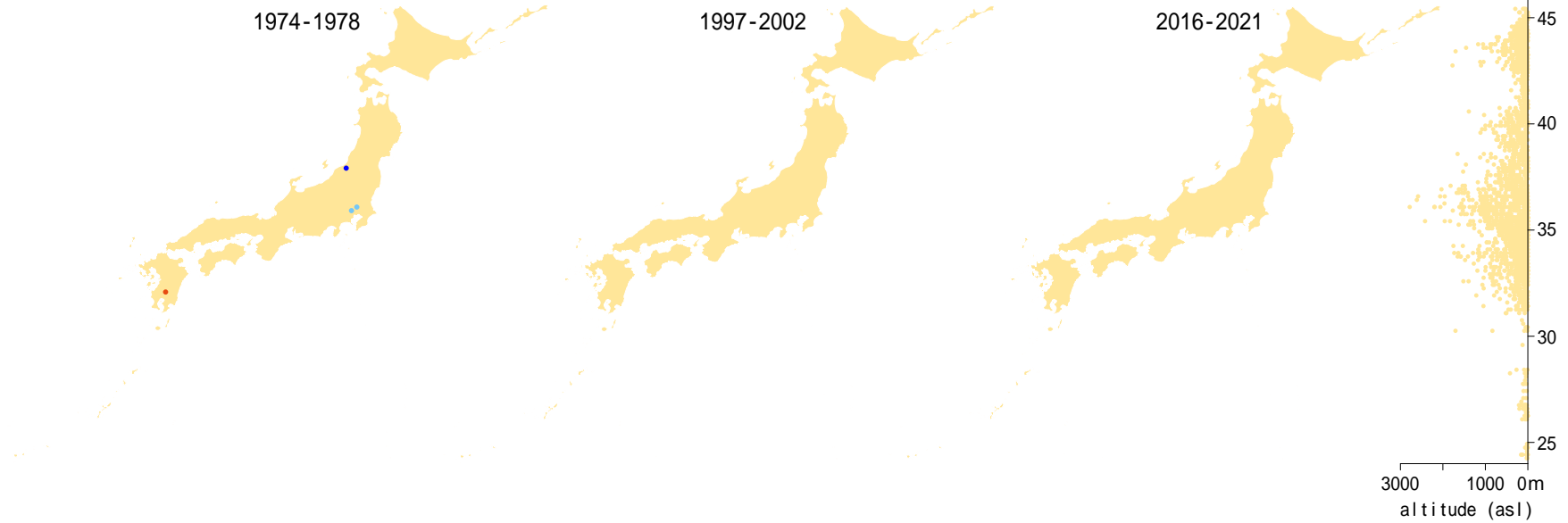
Budgerigar

Melopsittacus undulatus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	1	2
1997-2002	0	0	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	1
2016-2021	0



Rose-ringed Parakeet

Psittacula krameri

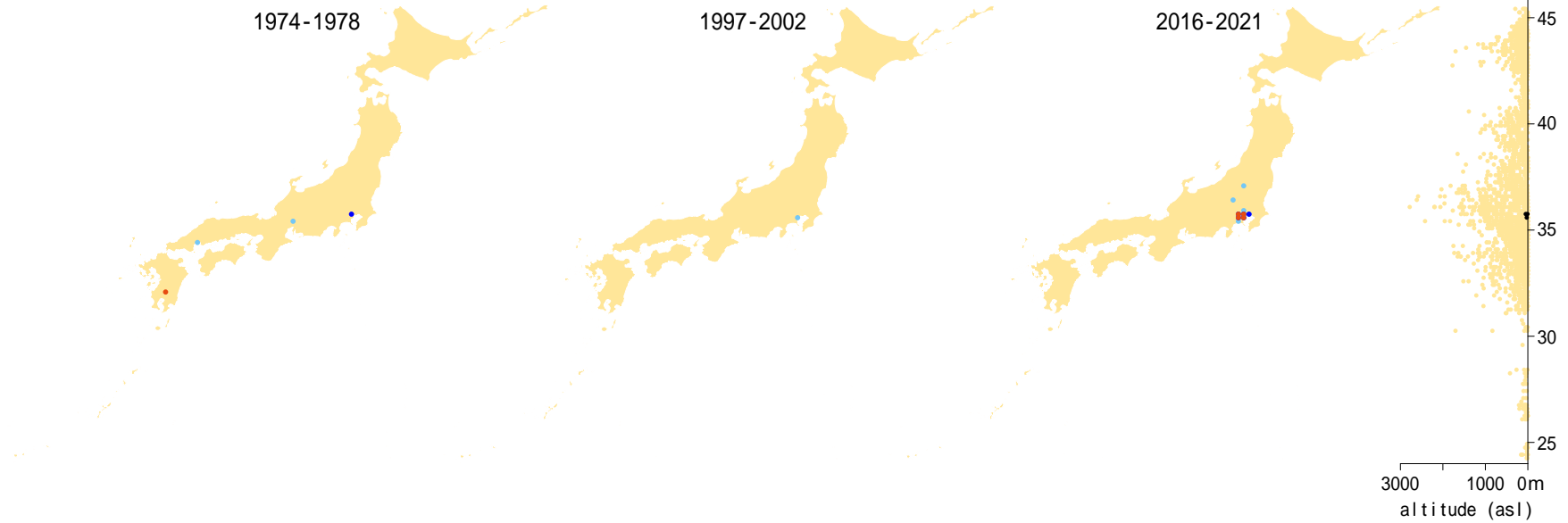
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	1	2
1997-2002	0	0	1
2016-2021	4	1	4

Recorded survey sites	
1997-2002	0
2016-2021	3



Altitudinal distribution
survey sites
recorded sites



Red-breasted Parakeet

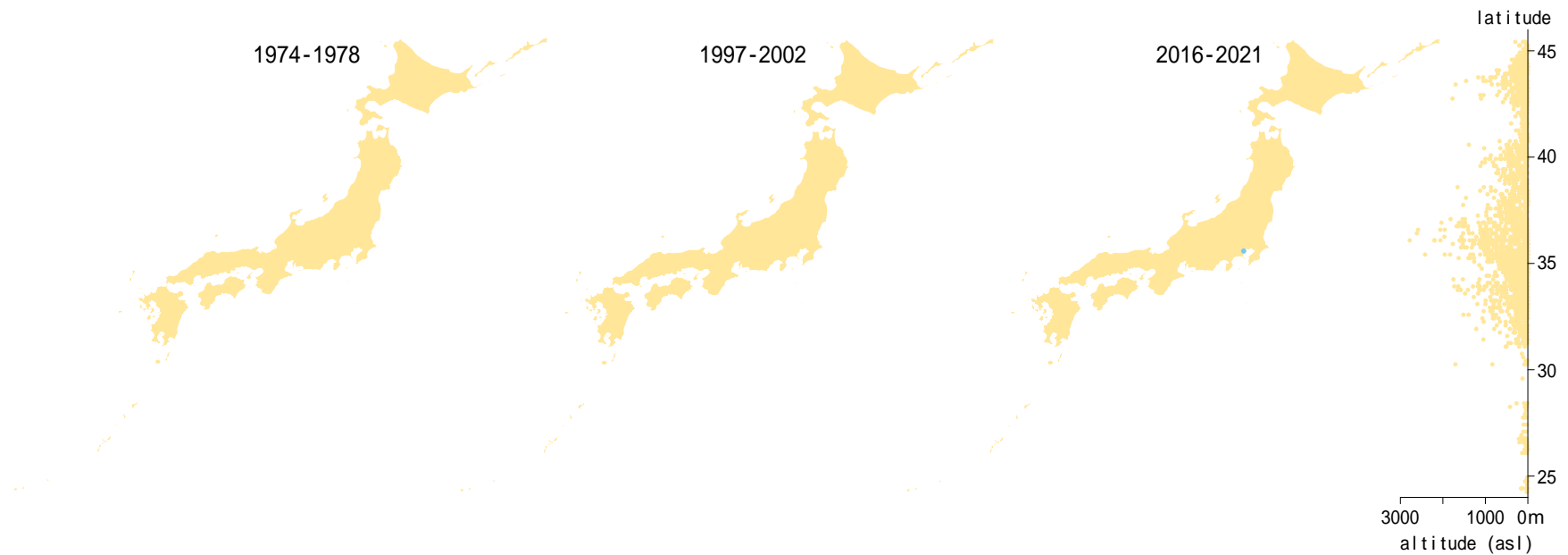
Psittacula alexandri

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	0	1

Recorded survey sites	
1997-2002	0
2016-2021	0

Altitudinal distribution
survey sites
recorded sites



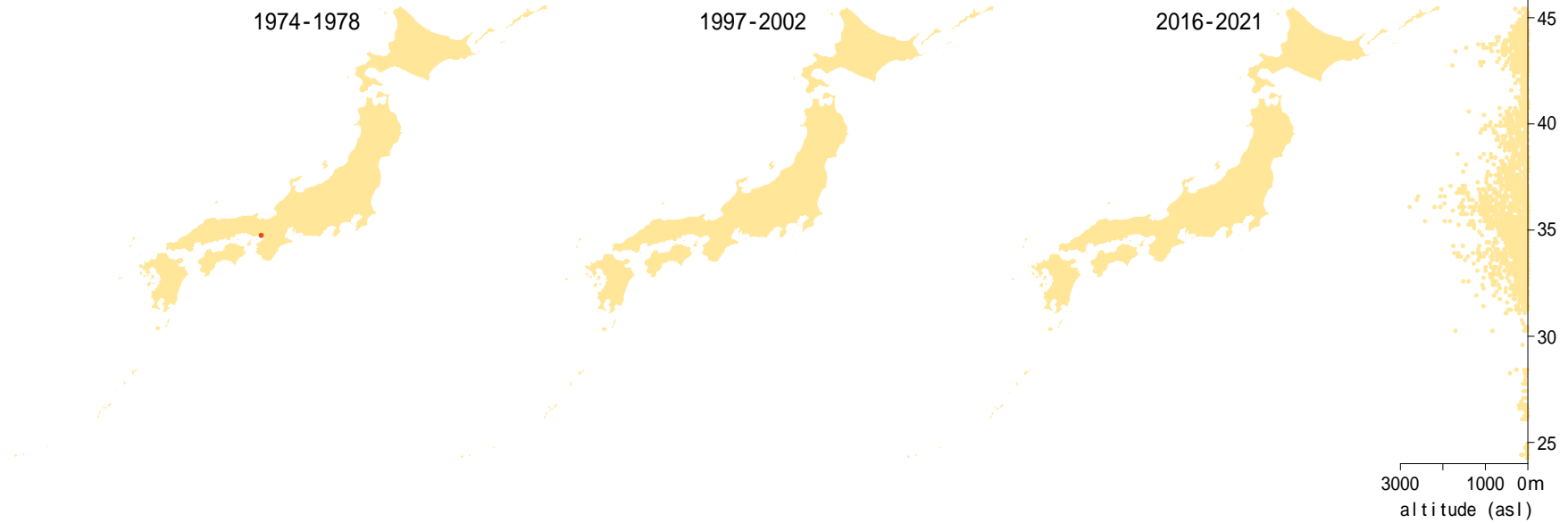
Monk Parakeet

Myiopsitta monachus

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	0	0
1997-2002	0	0	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



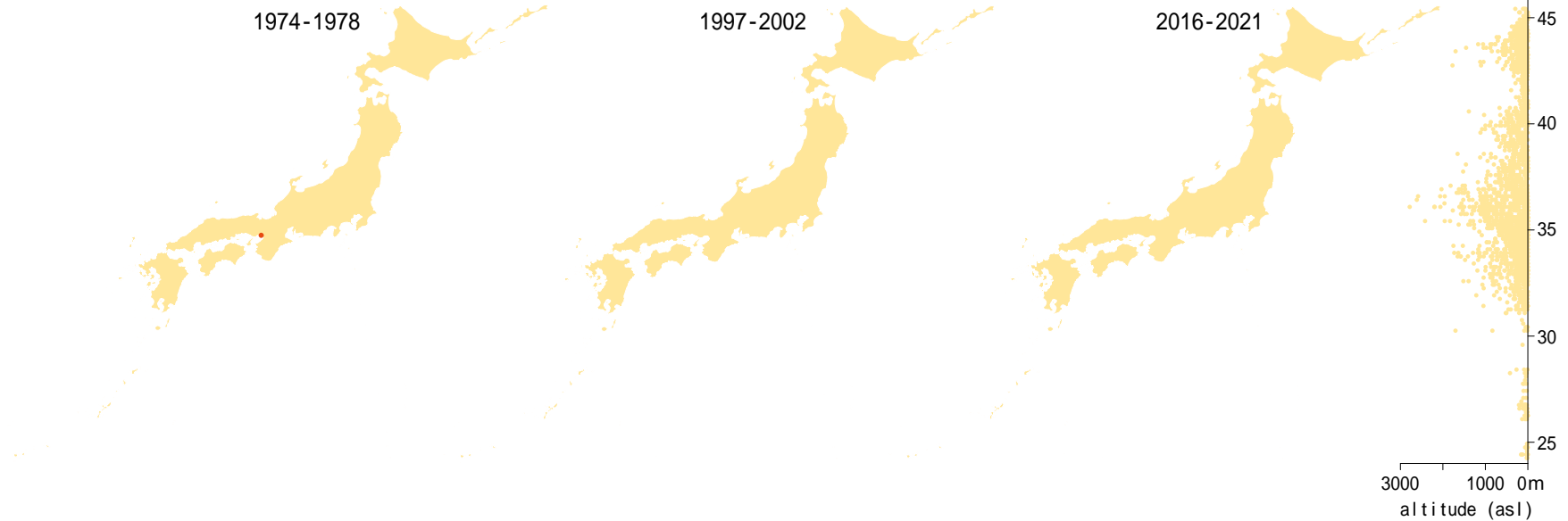
Taiwan Blue Magpie

Urocissa caerulea

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	0	0
1997-2002	0	0	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Red-billed Blue Magpie

Urocissa erythrorhyncha

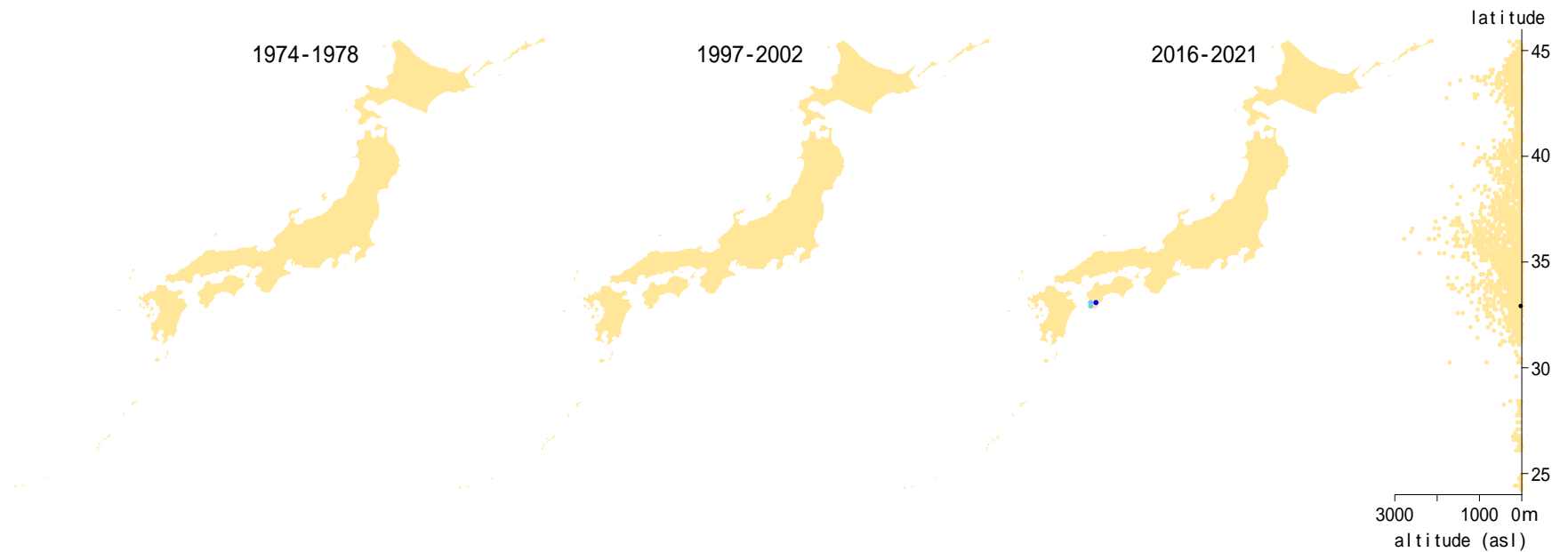
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	1	2

Recorded survey sites	
1997-2002	0
2016-2021	1



Altitudinal distribution
survey sites
recorded sites



Chinese Hwamei

Garrulax canorus

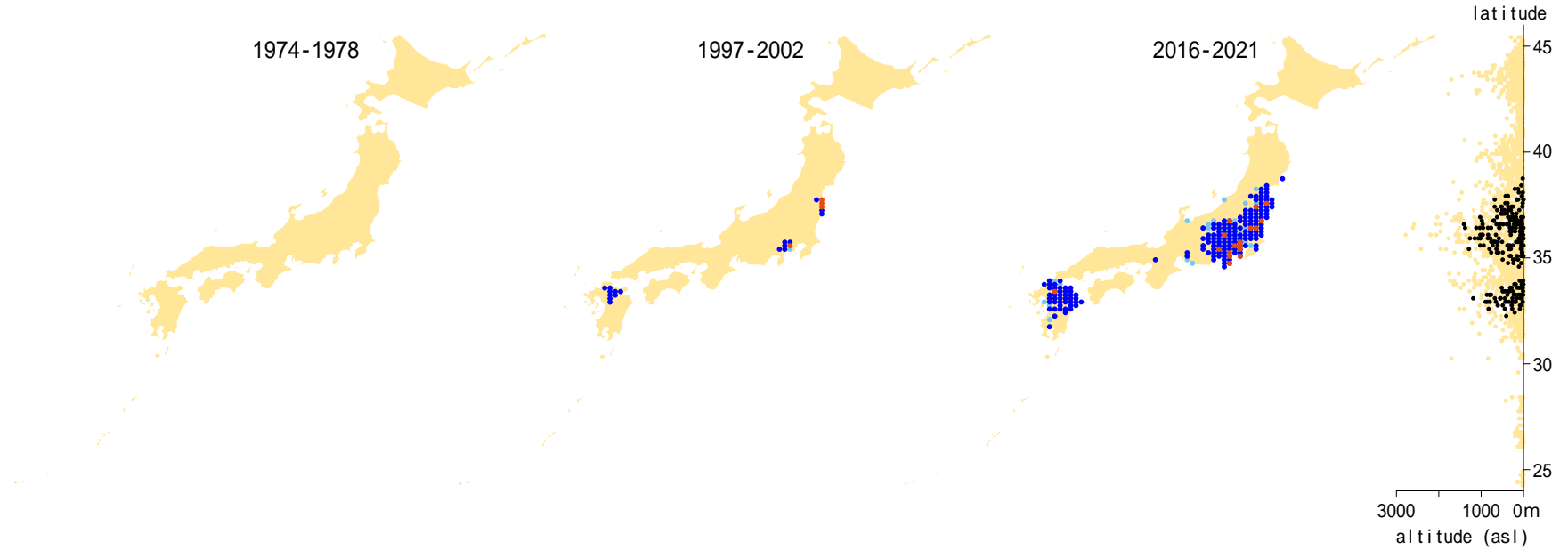
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	4	17	1
2016-2021	17	165	21

Recorded survey sites	
1997-2002	15
2016-2021	211



Altitudinal distribution
survey sites
recorded sites



Moustached Laughingthrush

Garrulax cineraceus

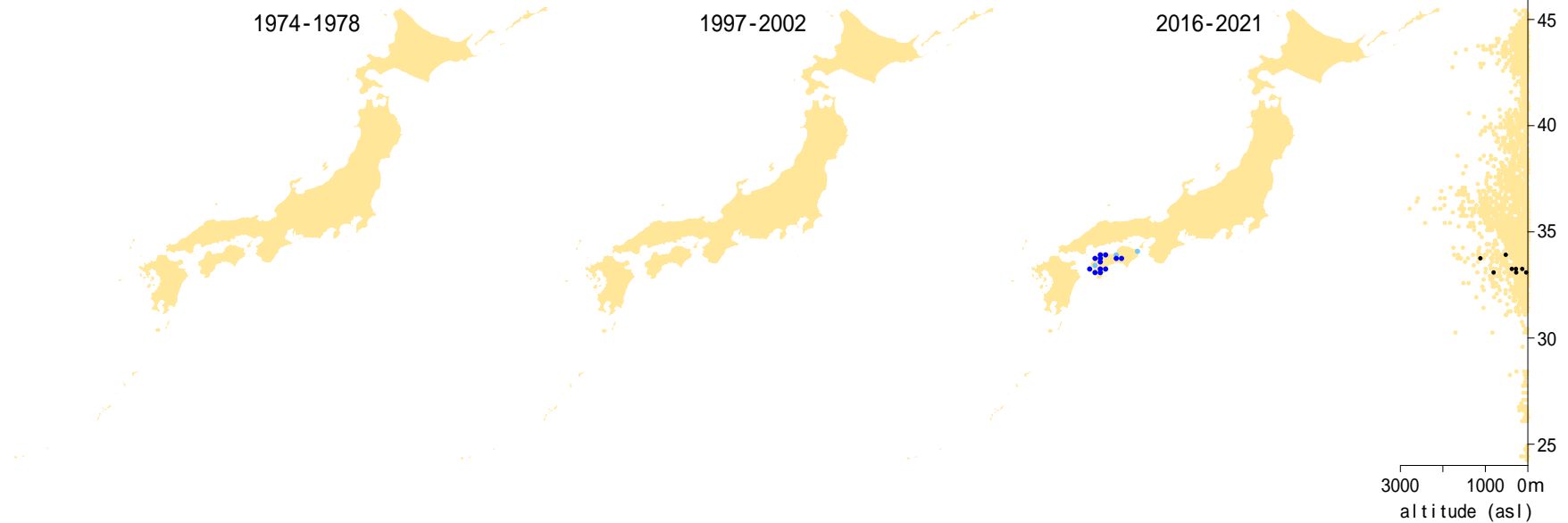
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	12	3

Recorded survey sites	
1997-2002	0
2016-2021	8



Altitudinal distribution
survey sites
recorded sites



Masked Laughingthrush

Garrulax perspicillatus

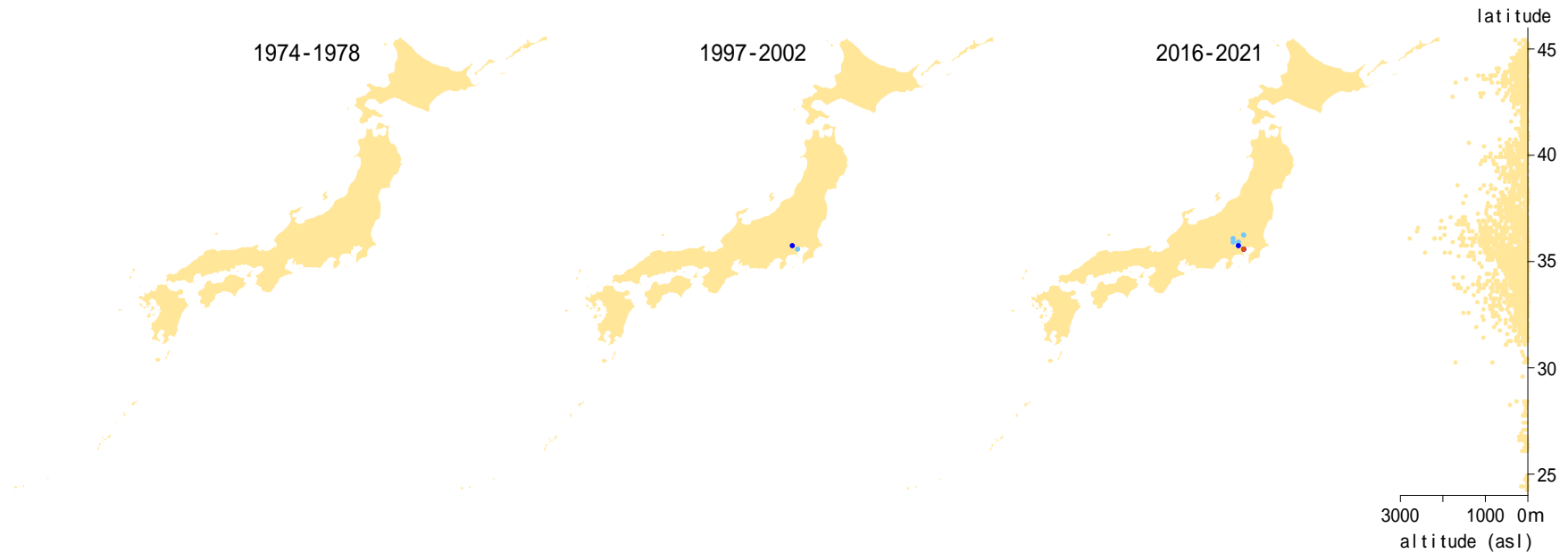
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	1	1
2016-2021	1	1	4

Recorded survey sites	
1997-2002	0
2016-2021	0



Altitudinal distribution
survey sites
recorded sites



White-browed Laughingthrush

Garrulax sannio

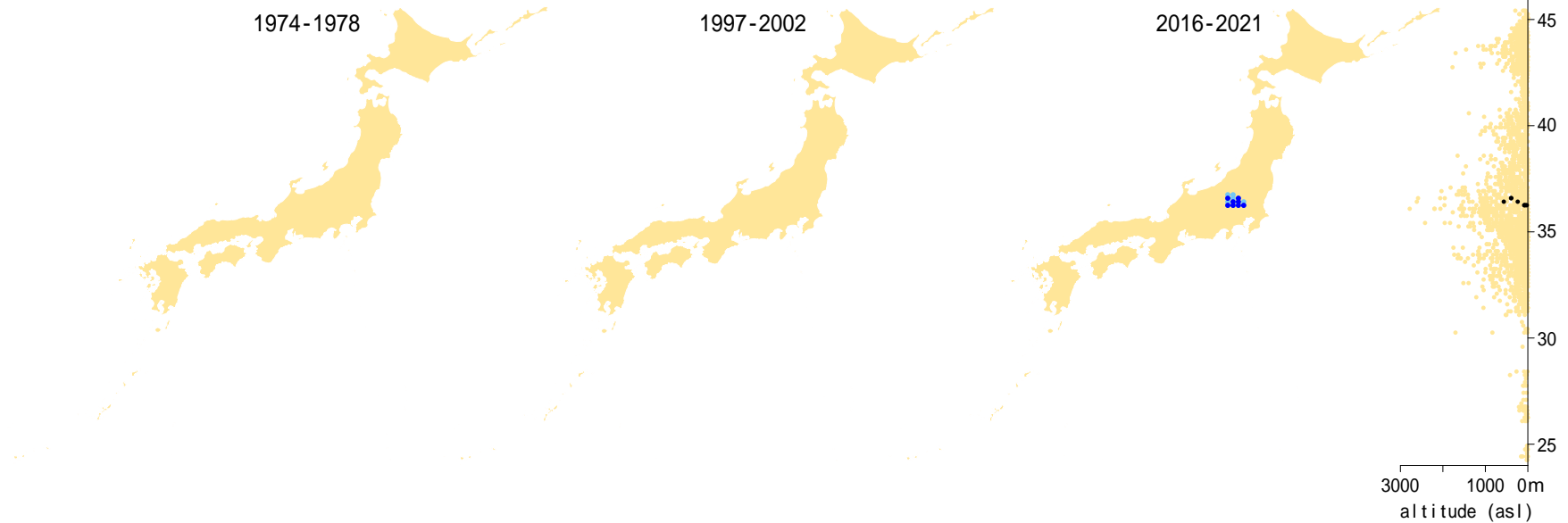
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	8	5

Recorded survey sites	
1997-2002	0
2016-2021	8



Altitudinal distribution
survey sites
recorded sites



Red-billed Leiothrix

Leiothrix lutea

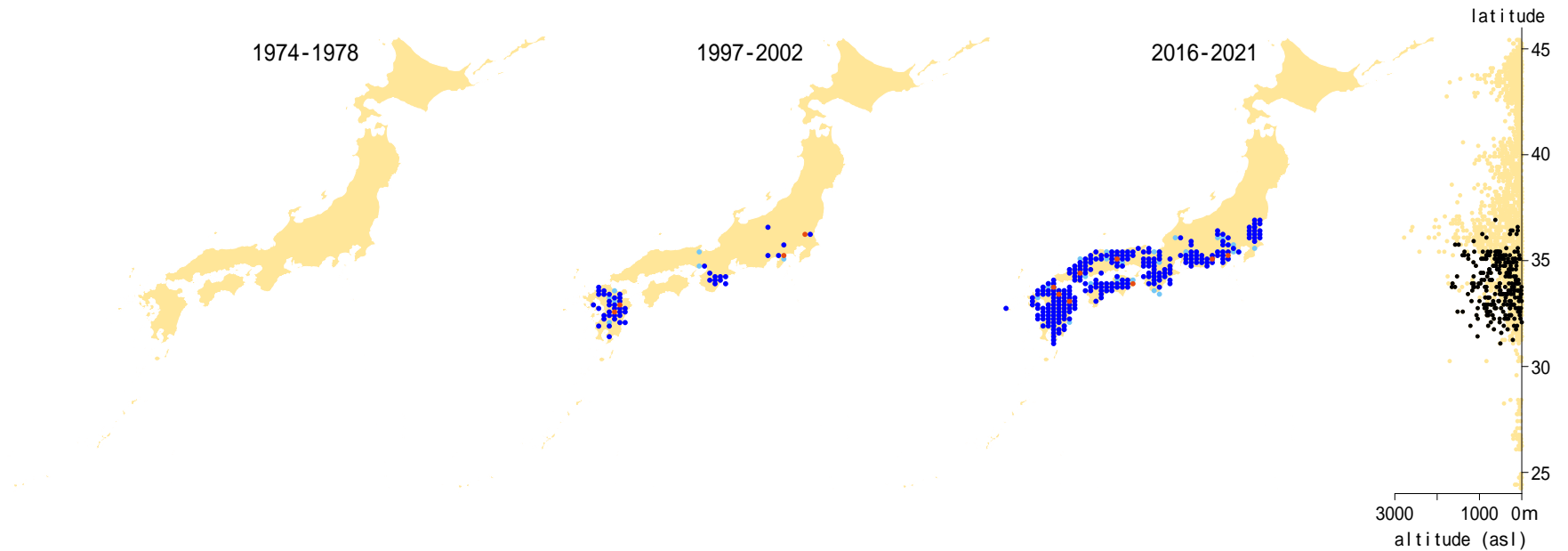
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	4	47	8
2016-2021	8	247	23

Recorded survey sites	
1997-2002	48
2016-2021	200



Altitudinal distribution
survey sites
recorded sites



Crested Myna

Acridotheres cristatellus

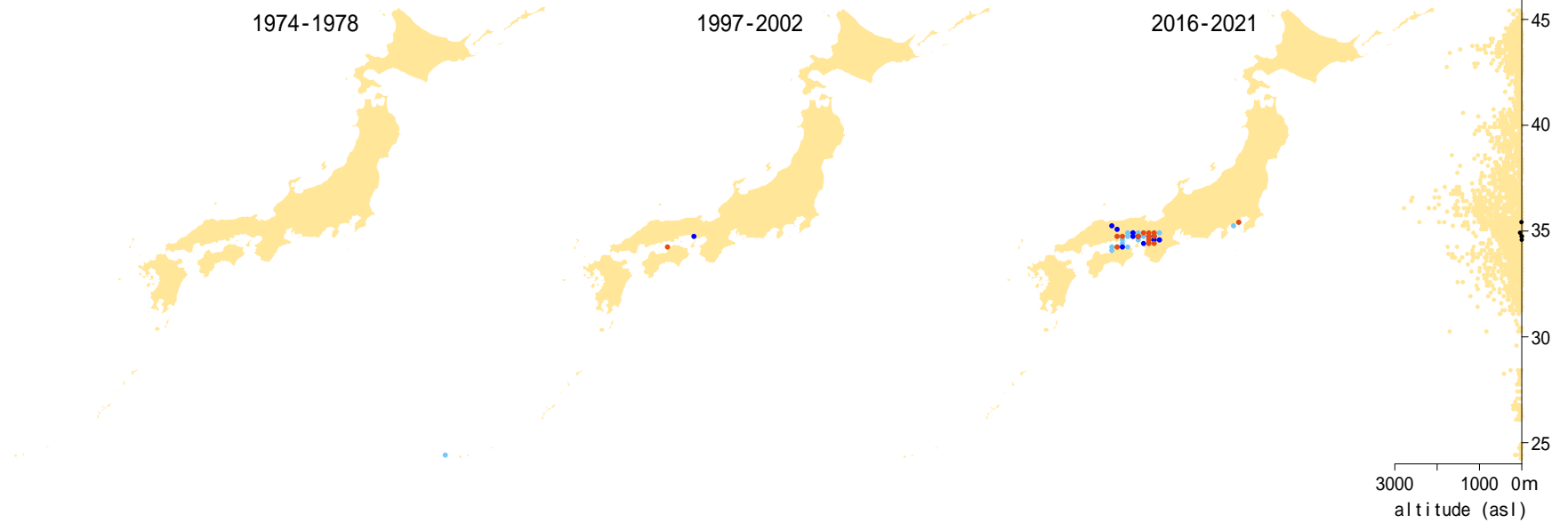
- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	1	1	1
2016-2021	13	8	12

Recorded survey sites	
1997-2002	0
2016-2021	5



Altitudinal distribution
survey sites
recorded sites



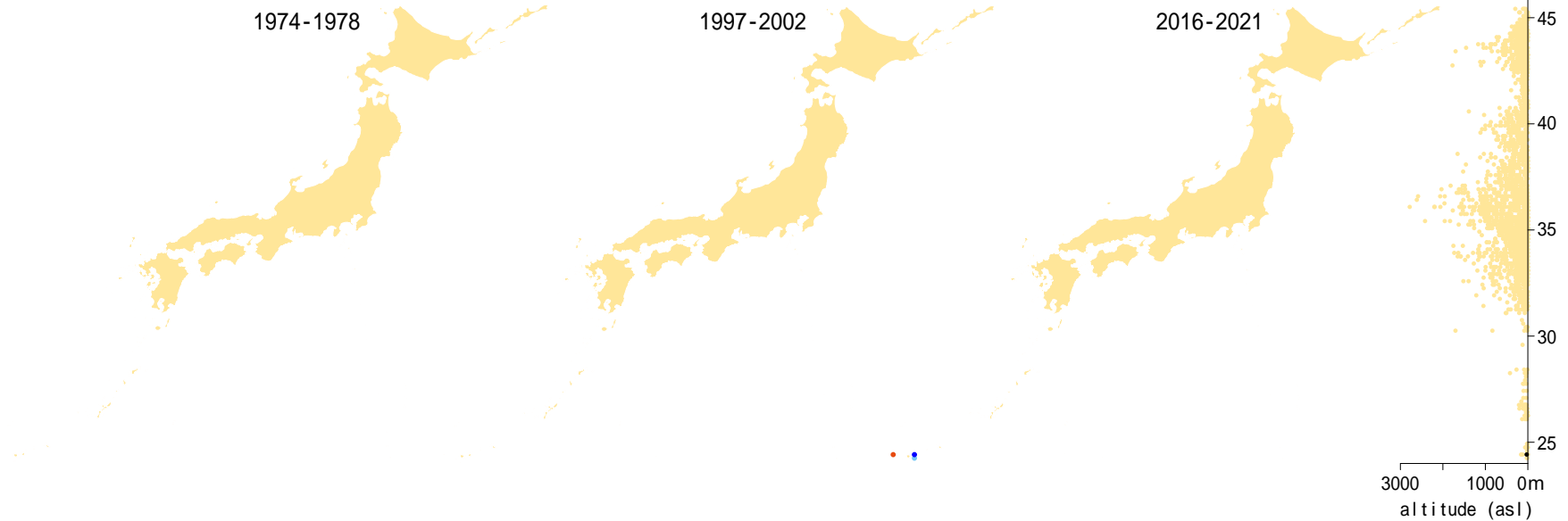
Common Myna

Acridotheres tristis

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	1	1	1

Recorded survey sites	
1997-2002	0
2016-2021	1



Orange Bishop

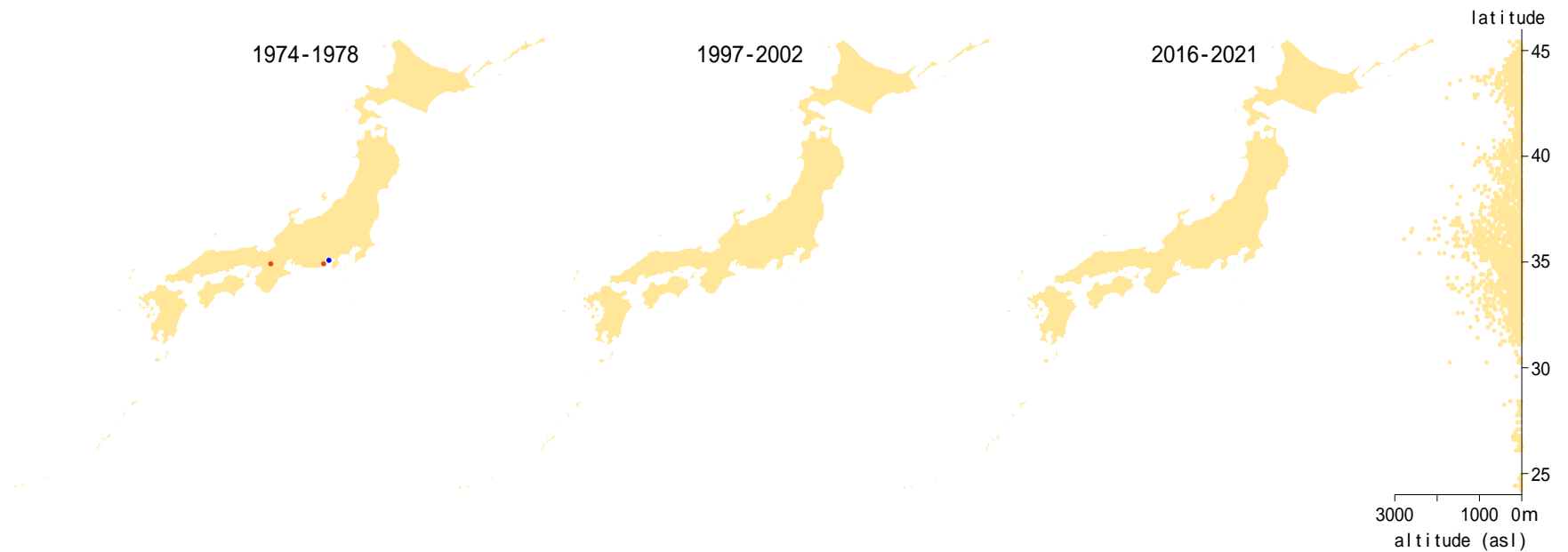
Euplectes orix

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	2	1	0
1997-2002	0	0	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0

Altitudinal distribution
survey sites
recorded sites



Red Avadavat

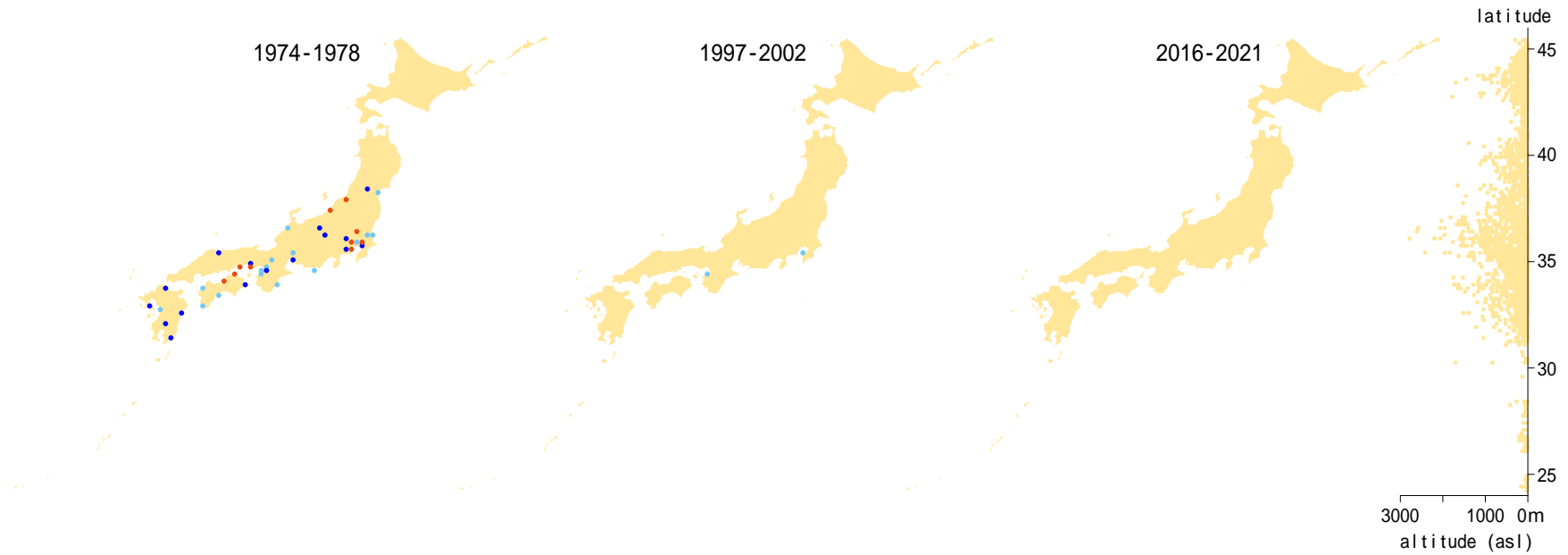
Amandava amandava

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	10	16	16
1997-2002	0	0	2
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0

Altitudinal distribution
survey sites
recorded sites



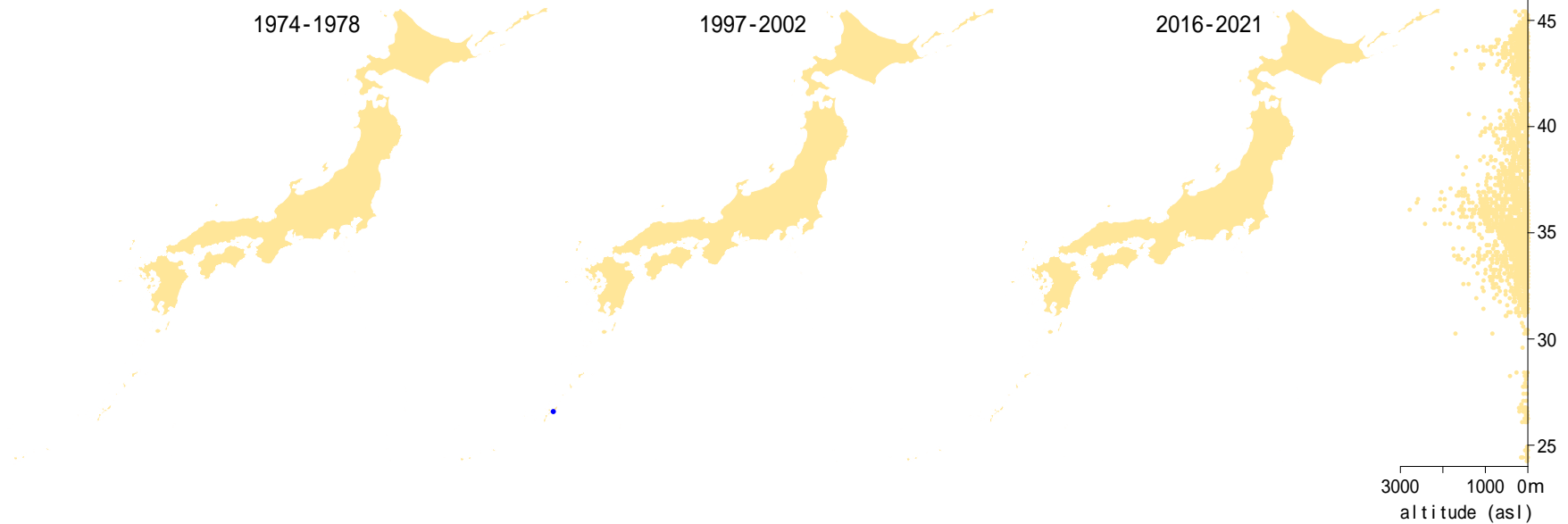
White-rumped Munia

Lonchura striata

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

	Recorded quadrats		
	A	B	C
1974-1978	0	0	0
1997-2002	0	1	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	1
2016-2021	0



Scaly-breasted Munia

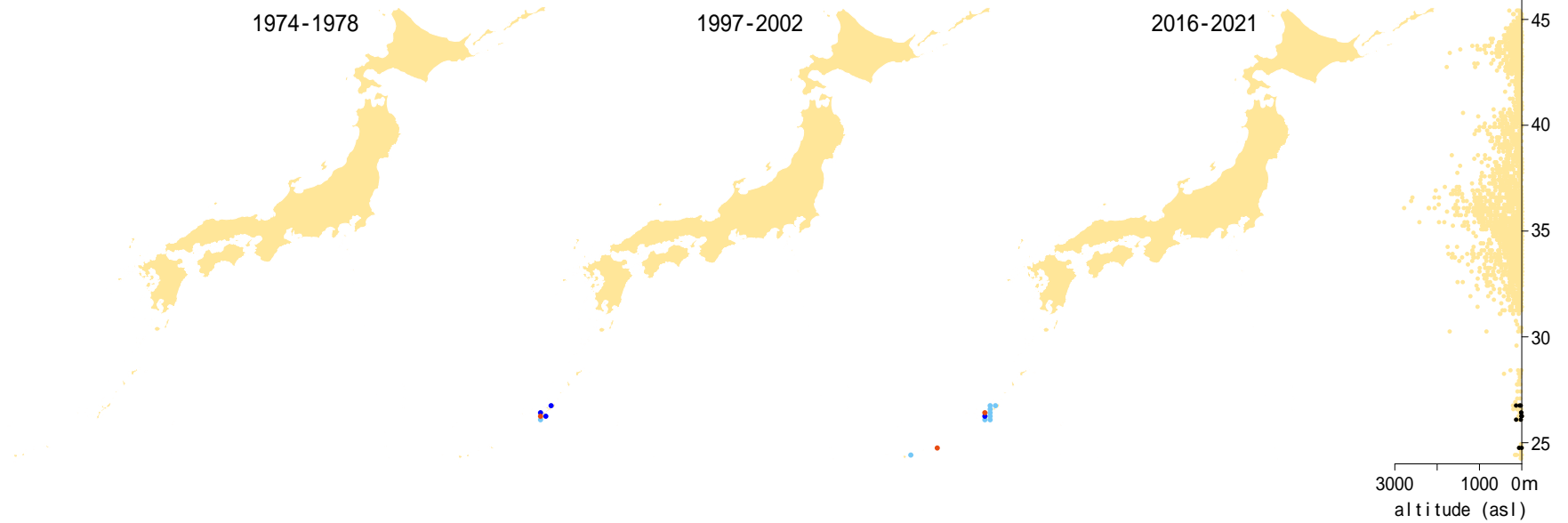
Lonchura punctulata

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	1	3	1
2016-2021	2	1	8

Recorded survey sites	
1997-2002	5
2016-2021	11

Altitudinal distribution
survey sites
recorded sites



Tricolored Munia

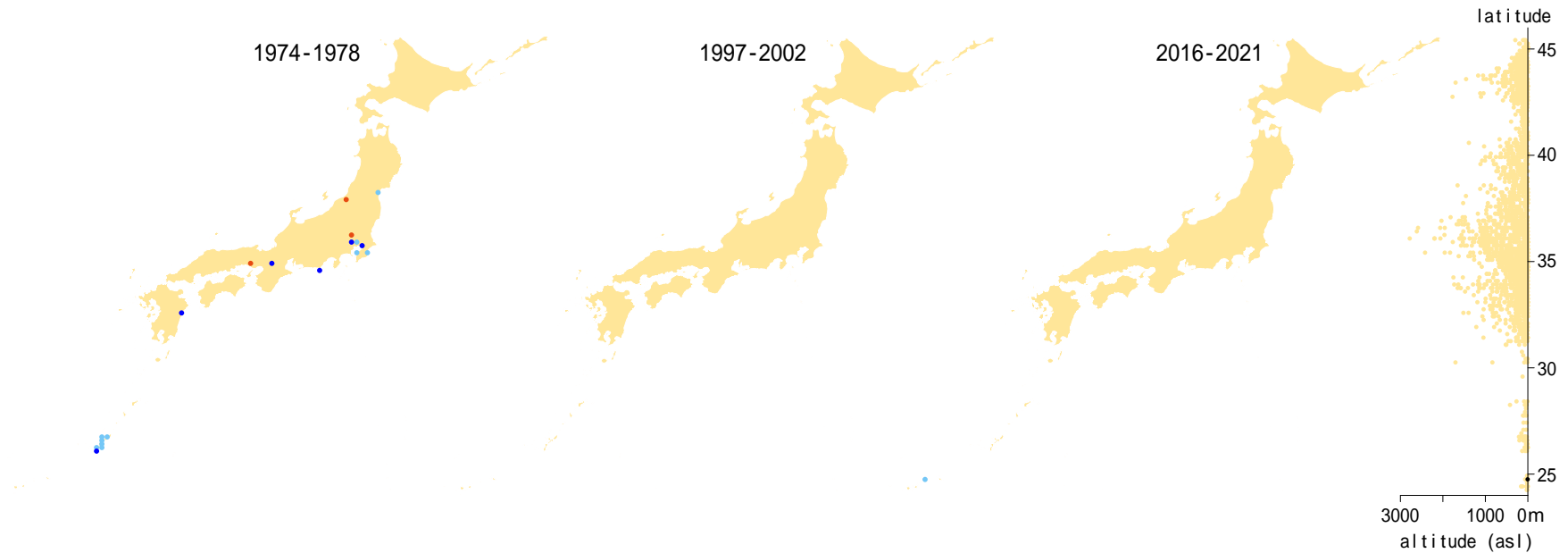
Lonchura malacca

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats	A	B	C
1974-1978	3	6	10
1997-2002	0	0	0
2016-2021	0	0	1

Recorded survey sites	
1997-2002	0
2016-2021	1

Altitudinal distribution
survey sites
recorded sites



Chestnut Munia

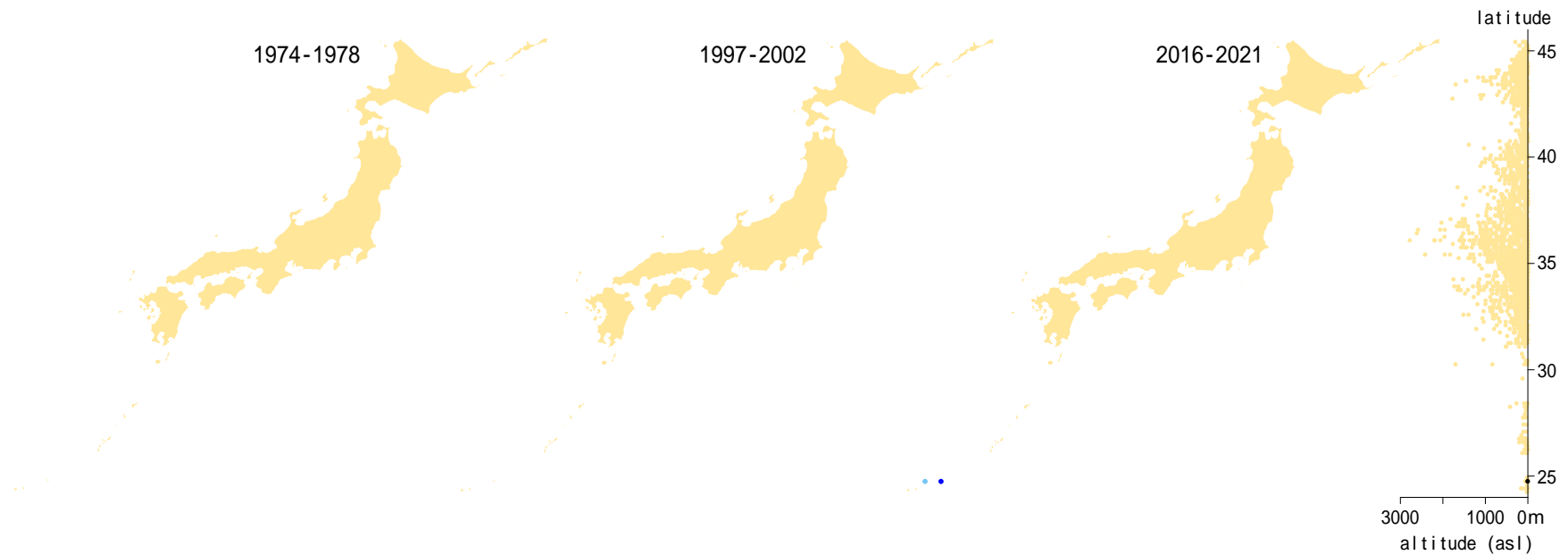
Lonchura atricapilla

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	0	0
1997-2002	0	0	0
2016-2021	0	1	1

Recorded survey sites	
1997-2002	0
2016-2021	1

Altitudinal distribution
survey sites
recorded sites



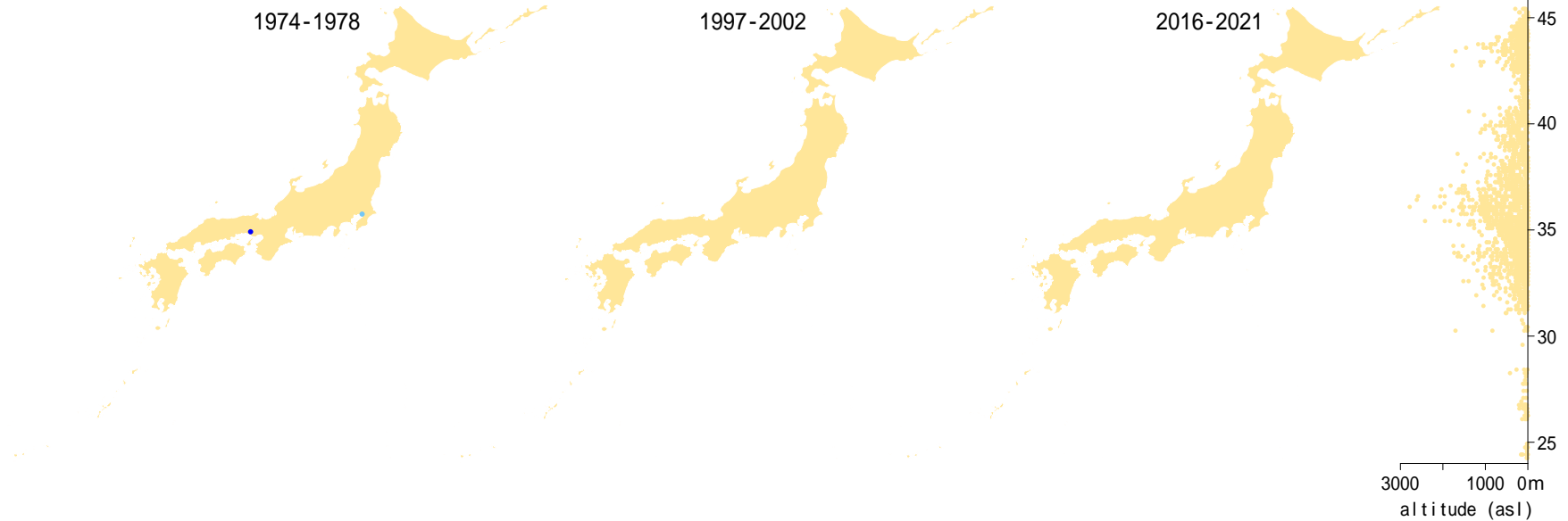
White-headed Munia

Lonchura maja

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	0	1	1
1997-2002	0	0	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Java Sparrow

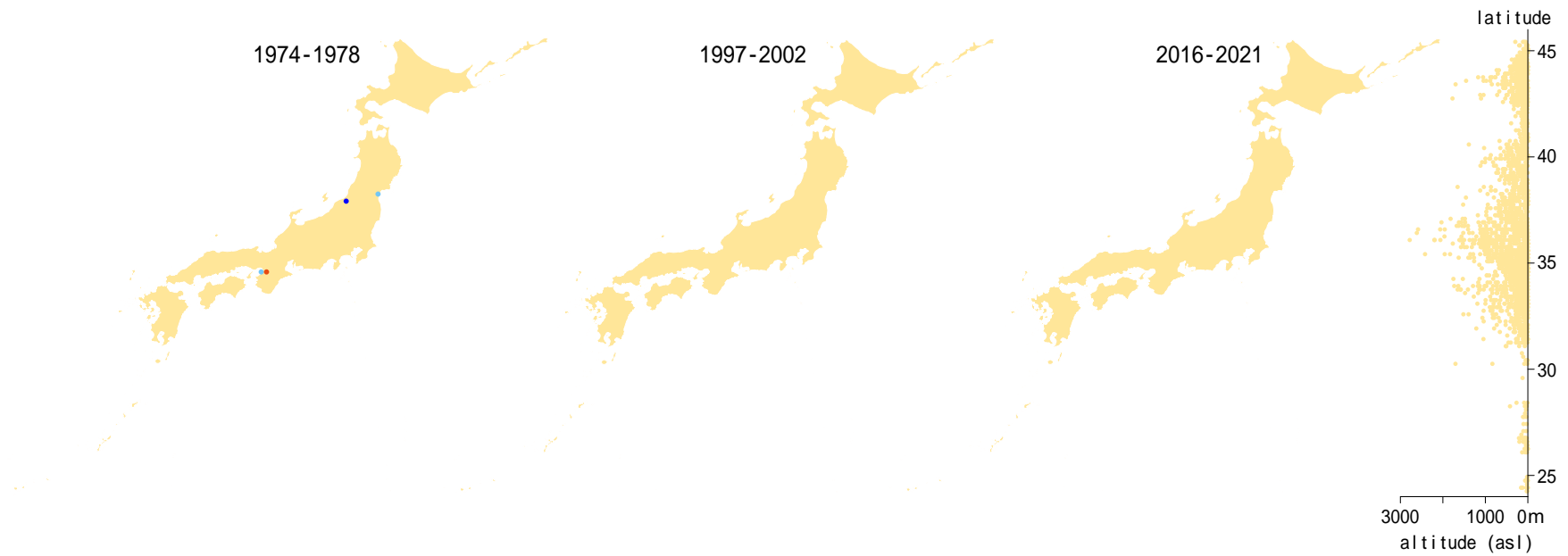
Lonchura oryzivora

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	1	2
1997-2002	0	0	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0

Altitudinal distribution
survey sites
recorded sites



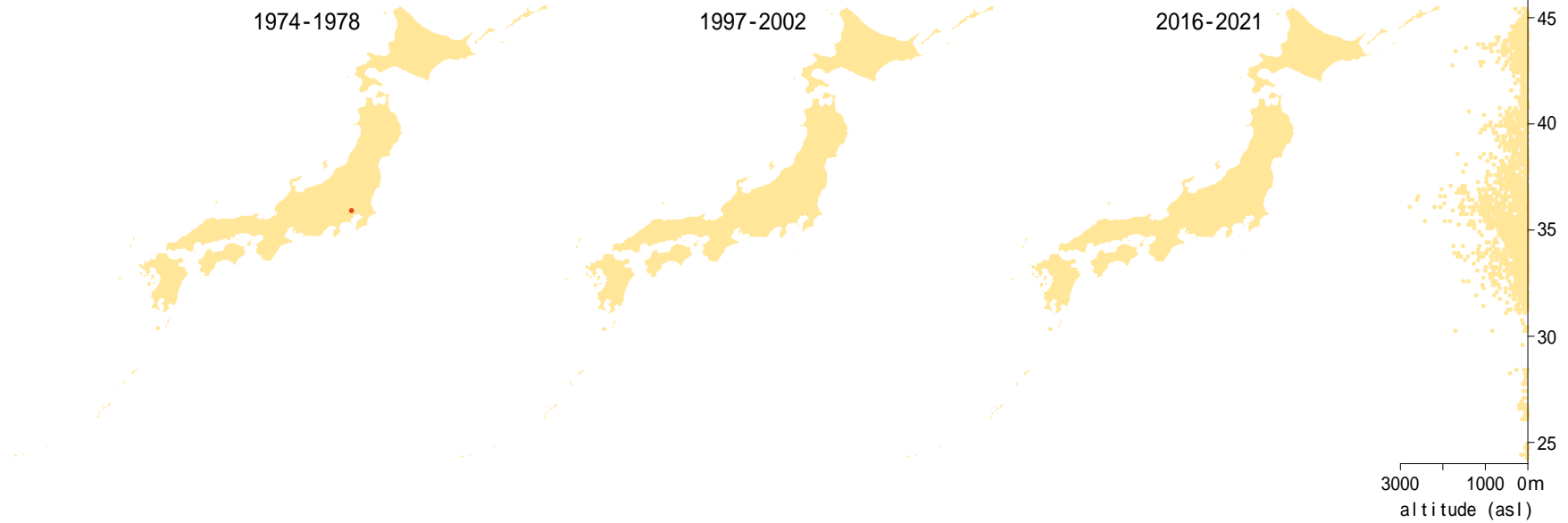
Red-crested Cardinal

Paroaria coronata

- A: breeding confirmed
- B: possibly breeding
- C: breeding unknown

Recorded quadrats			
	A	B	C
1974-1978	1	0	0
1997-2002	0	0	0
2016-2021	0	0	0

Recorded survey sites	
1997-2002	0
2016-2021	0



Current Status of Birds in Japan

Dominant Bird Species in Japan

Dominant species of birds in Japan are expressed in terms of spatial distribution and numerical abundance. Spatial distribution is decided by the number of recorded meshes of a species. The most dominant species in terms of distribution was Japanese Bush Warbler *Cettia diphone* since the first (1970s) survey (Table 2). As for the other species, Meadow Bunting *Emberiza cioides* which ranked 2nd in the first (1970s) survey dropped to the 6th in the second (1990s) and the third (2010s). The proportion of forest species increased, and the number of open habitat species such as Meadow Bunting, Carrion Crow *Corvus corone*, Eurasian Tree Sparrow *Passer montanus*, Grey-capped Greenfinch *Chloris sinica*, and Bull-headed Shrike *Lanius bucephalus* in the top 10 species declined from five in the first (1970s) to four in the second (1990s) and three in the third (2010s) surveys.

The species with the highest abundance are indicated by the total number of individuals recorded at the 1,947 comparable field survey sites. The most dominant species was Brown-eared Bulbul *Hypsipetes amaurotis*, followed by species with high densities in familiar areas, such as Eurasian Tree Sparrow and Barn Swallow *Hirundo rustica*, which did not rank high in the mesh counts, but ranked high in the abundance rank (Table 3).

Table 2. Number of recorded quadrats in each survey. Top 10 species were shown

1974-1978		1997-2002		2016-2021	
Species	quadrats	Species	quadrats	Species	quadrats
<i>Cettia diphone</i>	1,062	<i>Cettia diphone</i>	1,159	<i>Cettia diphone</i>	1,181
<i>Emberiza cioides</i>	1,035	<i>Hypsipetes amaurotis</i>	1,112	<i>Corvus macrorhynchos</i>	1,166
<i>Streptopelia orientalis</i>	1,022	<i>Streptopelia orientalis</i>	1,080	<i>Hypsipetes amaurotis</i>	1,148
<i>Hypsipetes amaurotis</i>	1,000	<i>Parus minor</i>	1,055	<i>Streptopelia orientalis</i>	1,133
<i>Parus minor</i>	995	<i>Corvus macrorhynchos</i>	1,042	<i>Parus minor</i>	1,117
<i>Corvus corone</i>	932	<i>Emberiza cioides</i>	1,036	<i>Emberiza cioides</i>	1,058
<i>Passer montanus</i>	892	<i>Chloris sinica</i>	988	<i>Chloris sinica</i>	1,050
<i>Chloris sinica</i>	887	<i>Dendrocopos kizuki</i>	935	<i>Ficedula narcissina</i>	1,030
<i>Corvus macrorhynchos</i>	887	<i>Corvus corone</i>	921	<i>Dendrocopos kizuki</i>	1,027
<i>Lanius bucephalus</i>	838	<i>Passer montanus</i>	880	<i>Corvus corone</i>	1,003

Green: forest species, Orange: open habitat species

Table 3. Total number of individuals in each survey. Top 10 species were shown

1997-2002		2016-2021	
Species	individuals	Species	individuals
<i>Hypsipetes amaurotis</i>	33,900	<i>Hypsipetes amaurotis</i>	33,151
<i>Passer montanus</i>	31,159	<i>Cettia diphone</i>	23,422
<i>Cettia diphone</i>	25,025	<i>Passer montanus</i>	20,627
<i>Hirundo rustica</i>	14,978	<i>Corvus macrorhyncho</i>	12,396
<i>Emberiza cioides</i>	13,987	<i>Emberiza cioides</i>	10,830
<i>Corvus macrorhynchos</i>	12,387	<i>Streptopelia orientalis</i>	10,544
<i>Spodiopsar cineraceus</i>	12,155	<i>Parus minor</i>	10,318
<i>Chloris sinica</i>	11,429	<i>Chloris sinica</i>	10,023
<i>Streptopelia orientalis</i>	10,931	<i>Hirundo rustica</i>	8,987
<i>Zosterops japonicus</i>	10,475	<i>Zosterops japonicus</i>	8,857

Green: forest species, Orange: open habitat species

Comparing the second (1990s) with the third (2010s) surveys, the numbers of open habitat species such as Eurasian Tree Sparrow, Barn Swallow, and White-cheeked Starling *Spodiopsar cineraceus* decreased significantly, while the decrease in forest species such as Brown-eared Bulbul and Japanese Bush Warbler was less severe.

Species that showed Differences between Periods and their Common Features

Based on the results of 1,947 comparable field survey sites, we summarized the trend of increase or decrease in the number of recorded sites and the total abundance of birds (sum of the number of individuals in courses and fixed points) in the target sites between the second (1990s; 1997-2002) and the third (2010s; 2016-2021) surveys. We selected the species which were recorded in more than 50 sites and showed the top 10 species with the highest rate of increase or decrease.

The difference in the recorded number of sites:

$$\frac{(\text{Number of recorded sites in the 2010s survey} - \text{Number of recorded sites in the 1990s survey}) \div \text{Number of recorded sites in the 1990s survey} \times 100}$$

The difference in total abundance:

$$(\text{Total abundance in the 2010s survey} - \text{Total abundance in the 1990s survey})$$

(1) Species that have Increased

The increase in the number of recorded sites was dominated by non-native Chinese Hwamei *Garrulax canorus* and Red-billed Leiothrix *Leiothrix lutea*. In terms of the increase in numerical abundance, Narcissus Flycatcher *Ficedula narcissina* and Eastern Crowned Warbler *Phylloscopus coronatus* were the greatest. Both the number of recorded sites and total abundance were dominated by forest species, and the single non-forest species that came in third place was Great Cormorant *Phalacrocorax carbo* (Table 4).

Table 4. Top ten increased species from 1997-2002 to 2016-2021.

Changes in recorded survey sites				Changes in total number of individuals			
Species	1997-2002	2016-2021	change (%)	Species	1997-2002	2016-2021	change
<i>Garrulax canorus</i>	15	211	1306.7	<i>Ficedula narcissina</i>	3,520	8,521	5,001
<i>Leiothrix lutea</i>	48	200	316.7	<i>Phylloscopus coronatus</i>	3,778	6,391	2,613
<i>Phalacrocorax carbo</i>	104	306	194.2	<i>Poecile varius</i>	4,737	6,694	1,957
<i>Certhia familiaris</i>	32	94	193.8	<i>Treron sieboldii</i>	1,284	2,465	1,181
<i>Pericrocotus divaricatus</i>	190	478	151.6	<i>Garrulax canorus</i>	54	1,105	1,051
<i>Grey Nightjar</i>	19	43	126.3	<i>Pericrocotus divaricatus</i>	694	1,700	1,006
<i>Picus canus</i>	38	78	105.3	<i>Cyanoptila cyanomelana</i>	3,359	4,281	922
<i>Terpsiphone atrocaudata</i>	204	411	101.5	<i>Leiothrix lutea</i>	621	1,507	886
<i>Treron sieboldii</i>	410	799	94.9	<i>Periparus ater</i>	3,833	4,591	758
<i>Halcyon coromanda</i>	171	312	82.5	<i>Turdus cardis</i>	1,383	1,981	598

Among the species with less than 50 recorded sites that showed a similar rate of increase in distribution were Indian Cuckoo (1 to 9 sites), Fairy Pitta (10 to 32 sites), Great Crested Grebe (8 to 21 sites), White-tailed Eagle (13 to 31 sites), Red-crowned Crane (9 to 21 sites), and Common Emerald Dove (7 to 14 sites).

Increase in Non-native Birds

In addition to a marked increase in the abundance of Chinese Hwamei and Red-billed Leiothrix, which are specified alien species, there was also an increase in the abundance of species of the family Timaliidae, such as Moustached Laughingthrush, Masked Laughingthrush, and White-browed Laughingthrush. Others included Mute Swan, Rose-ringed Parakeet, and Crested Myna were slowly expanding their distribution. On the other hand, many species in the family Estrildidae that were often observed in the past, such as Red Avadavat and White-rumped Munia, were no longer recorded.

Increase in the Number of Forest Species

Most of the top species in terms of distribution or population increase were forest species. Many summer migrants that had previously been concerned as declining increased in the 2010s survey. Ashy Minivet, which was selected for the Red List of the Ministry of the Environment in 1998 based on the results of the 1990s survey, also showed an increase. The Forest Agency's statistics show that the amount of forest accumulation is increasing year by year, and as forests mature, habitat conditions seem to become more favorable for arboreal species to inhabit.

Increase in the Number of Large Fish-eating Species

The only non-forest species that was among the top in terms of distribution or total population increase was Great Cormorant. Great Cormorant is a large fish-eating species, and other species with similar ecology such as Great Egret (48.6% increase in the number of recorded sites) and Western Osprey (43.5%) also increased, as did Great Crested Grebe and White-tailed Eagle. The increase in the number of large fish-eating species was also noted in the second (1990s) survey, and this trend is thought to be continuing today. The first (1970s) survey period saw a sharp decline in the number of raptors and fish-eating species worldwide due to the impacts of pesticides, water pollution, and development, and the current increase is thought to be a recovery after the decline.

(2) Decreased Species

The most conspicuous decrease in distribution was seen in the herons: Eastern Cattle Egret *Bubulcus ibis*, Little Egret *Egretta garzetta*, and Black-crowned Night Heron *Nycticorax nycticorax* as well as Little Tern *Sterna albifrons*. Japanese Leaf Warbler also ranked high, in 7th place (-52.0%). However, Japanese Leaf Warbler and Kamchatka Leaf Warbler, which were treated as the same species in the 1990s survey, were separated in this survey. Therefore, we did not compare their distribution trend to avoid the possibility of wrong analysis. As for species with fewer than 50 recorded sites, there were declines in Brown Shrike (from 15 to 3 sites), Sand Martin (from 35 to 17 sites), Kentish Plover (from 22 to 9 sites), House Swift (from 25 to 12 sites), Pacific Reef Heron (from 15 to 9 sites), and Japanese Accentor (from 24 to 16 sites).

The largest decreases in the total abundance were seen in familiar birds such as Eurasian Tree Sparrow and Barn Swallow.

Table 5. Top ten decreased species from 1997-2002 to 2016-2021.

Changes in recorded survey sites				Changes in total number of individuals			
Species	1997-2002	2016-2021	change (%)	Species	1997-2002	2016-2021	change
<i>Sterna albifrons</i>	59	15	-74.6	<i>Passer montanus</i>	31,159	20,627	-10,532
<i>Bubulcus ibis</i>	117	38	-67.5	<i>Hirundo rustica</i>	14,978	8,987	-5,991
<i>Egretta garzetta</i>	239	93	-61.1	<i>Nycticorax nycticorax</i>	6,197	738	-5,459
<i>Nycticorax nycticorax</i>	236	93	-60.6	<i>Milvus migrans</i>	7,021	2,401	-4,620
<i>Accipiter nisus</i>	48	19	-60.4	<i>Spodiopsar cineraceus</i>	12,155	7,729	-4,426
<i>Butorides striata</i>	45	20	-55.6	<i>Delichon dasypus</i>	7,855	4,002	-3,853
<i>Gallinula chloropus</i>	87	42	-51.7	<i>Larus crassirostris</i>	5,562	2,048	-3,514
<i>Hirundapus caudacutus</i>	46	23	-50.0	<i>Columba livia</i>	6,031	2,539	-3,492
<i>Cyanopica cyanus</i>	68	35	-48.5	<i>Bubulcus ibis</i>	3,591	239	-3,352
<i>Apus pacificus</i>	145	84	-42.1	<i>Emberiza cioides</i>	13,987	10,830	-3,157

Decrease in Small Fish-eating Species

Most of the top species that decreased in distribution were small fish-eating species. Below the top 10, the distribution of Crested Kingfisher shrank by -37.8%. As the number of large fish-eating species that live and breed in the same area is increasing, the abundance of prey fish that small fish-eaters feed on may be decreasing. It is known that the number of small fishes has been decreasing due to non-native fishes such as largemouth bass and smallmouth bass in Japan.

In addition, competition with large fish-eating species, which are on the increase, for food and nesting sites may also have an impact. Both large and small herons breed in heronry in the same habitat. Large heron species start breeding earlier than small ones. If the larger species that start breeding earlier occupy better nesting sites, the smaller species may be forced to nest in poor conditions, which may reduce their breeding performance.

In addition, changes in agricultural land may also be considered. Some of the smaller fish-eating species often catch fish in paddy fields, so modernization of paddy fields may also have had an impact. It is known that in paddy fields with improved drainage, the number of aquatic organisms as food for birds decreases because small organisms cannot enter the paddy fields from waterways (Lane & Fujioka 1998).

Decrease of Aerial Feeding Species

We found a conspicuous decrease in the number of aerial feeding species: White-throated Needletail, Pacific Swift, Barn Swallow, Asian House Martin, Sand Martin, and House Swift. Red-rumped Swallow also showed a decrease of 34.3%. All species of swallows and swifts showed a decreasing trend nationwide, except for Pacific Swallow distributed in the Nansei Islands in the Southwest.

These birds are flight feeders, feeding on flying insects, and the decrease in food supply may have led to the decline of these birds.

Decrease in Species in Open Habitats such as Farmland

Populations of species that use open habitats including farmland, such as Eastern Cattle Egret, Barn Swallow, White-cheeked Starling, and Eurasian Tree Sparrow, have decreased. This may be due to abandonment of cultivation, changes in the farmland environment caused by the modernization of agriculture, and a decrease in the number of insects caused by neonicotinoid pesticides.

Decrease in Species that have Strong Connections to Humans

Numbers of species that depend on human feedings and fishery/farm wastes for their food, such as Black Kite, Rock Dove, and Black-tailed Gull, have decreased. The decrease in the number of these species tended to be more pronounced in the areas where the number of individuals per site was higher in the 1990s, suggesting that the decrease in feeding and the proper disposal of fishery/farm waste may have led to these results.

Climate Change and Breeding Distribution

Some of the changes in distribution during the breeding season could be attributed to the effects of the global climate change. For example, the breeding distribution of Black-faced Bunting was considered to be gradually moving northward. In Japan, it breeds mainly in northern Japan and at high altitudes in the central and western parts of the country. On the other hand, in Russia, this species is increasing its distribution toward the north, and its population is increasing. In addition, the distribution of Olive-backed Pipit was shrinking in western Japan and the lower elevation parts of the country.

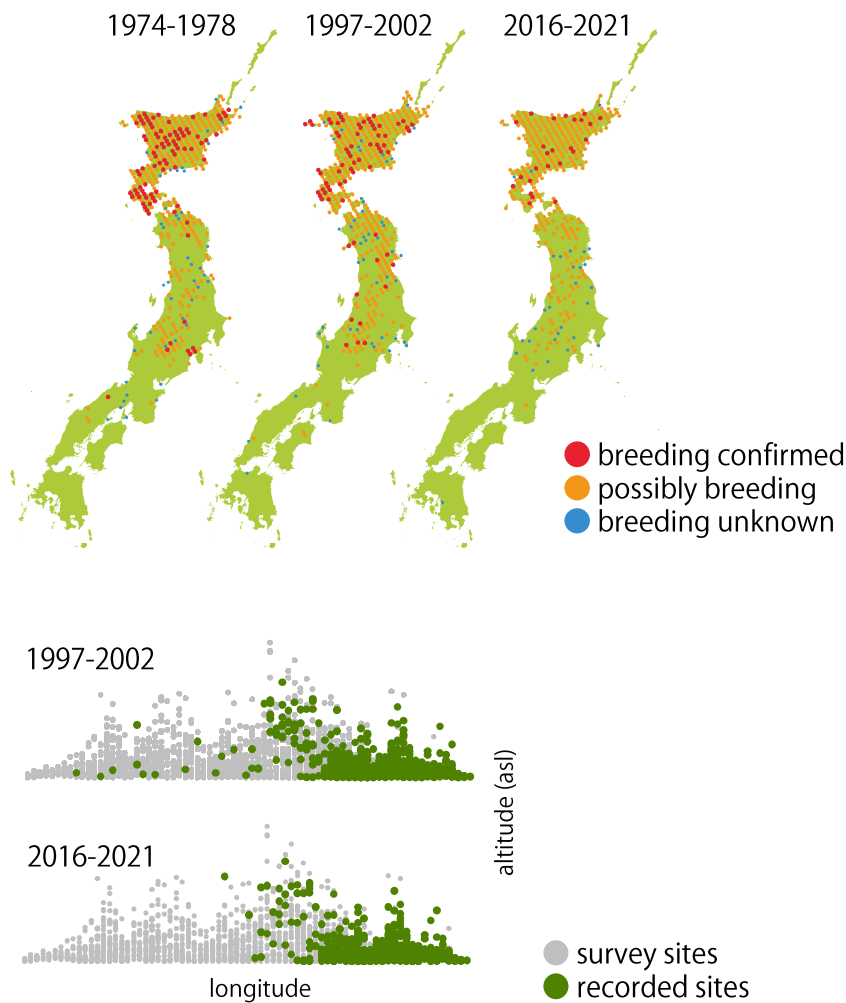


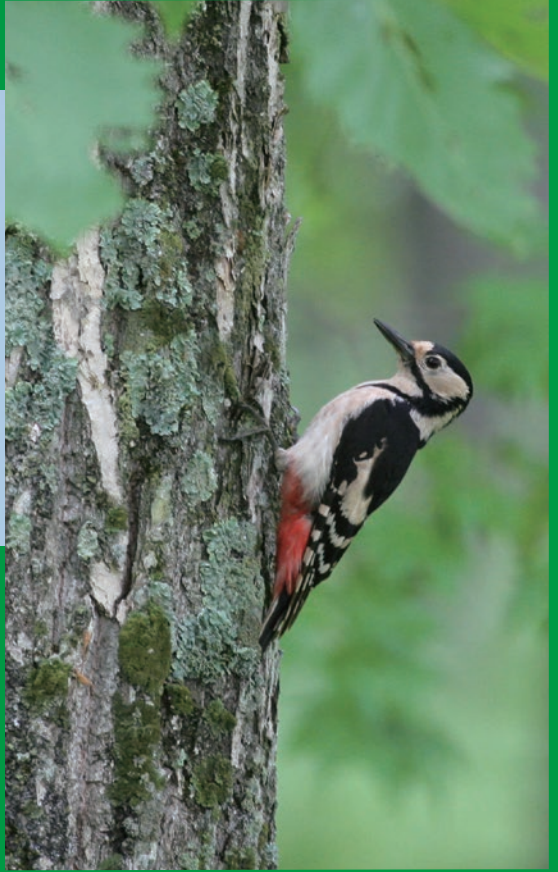
Fig. 2. Changes in the horizontal (top) and vertical (bottom) distributions of Black-faced Bunting. Records west of central Honshu were decreasing.

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全国鳥類繁殖分布調査
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