

Biodiversity, ecosystem services and ecosystem network in protected areas of Okinawa

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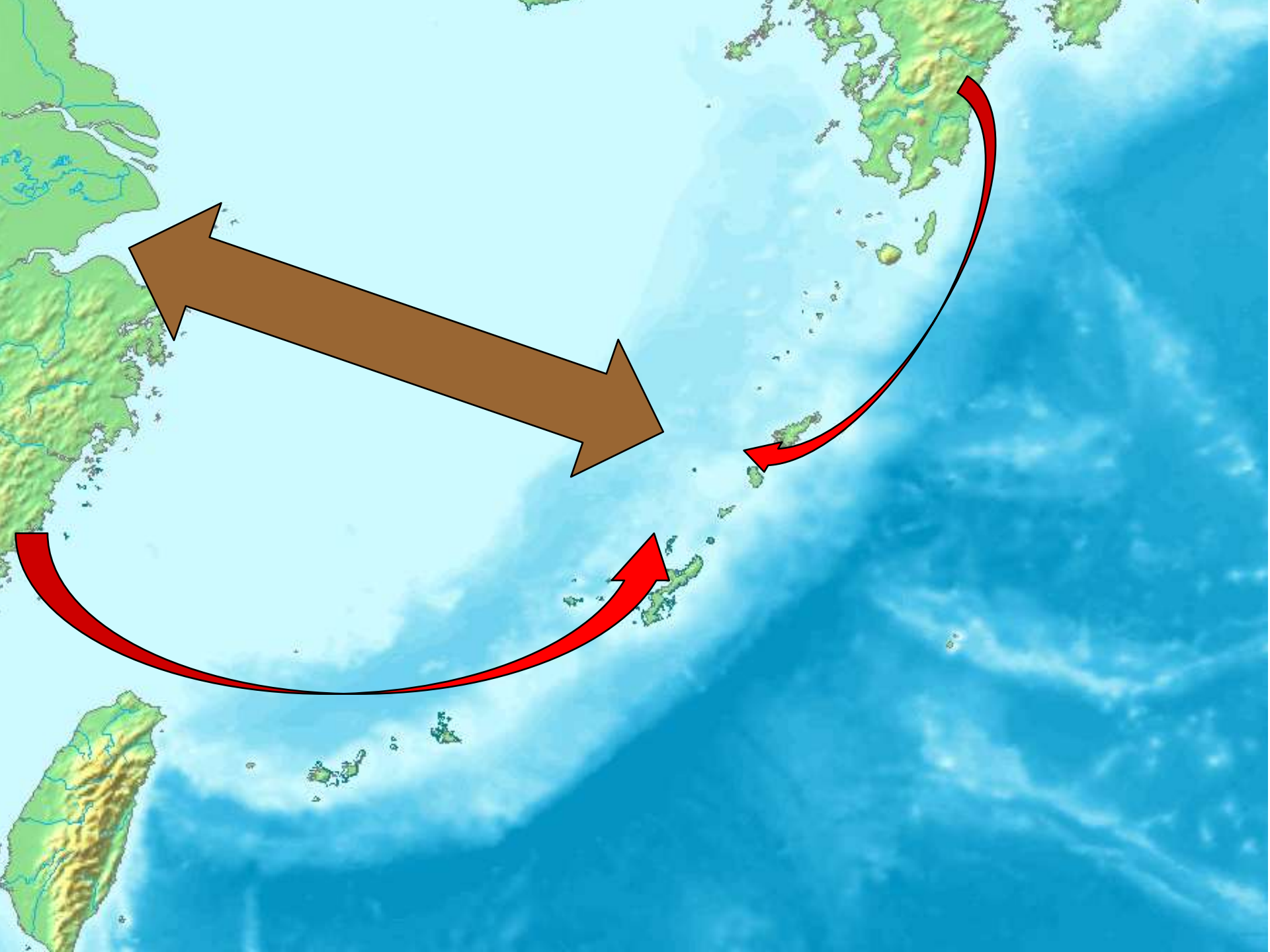
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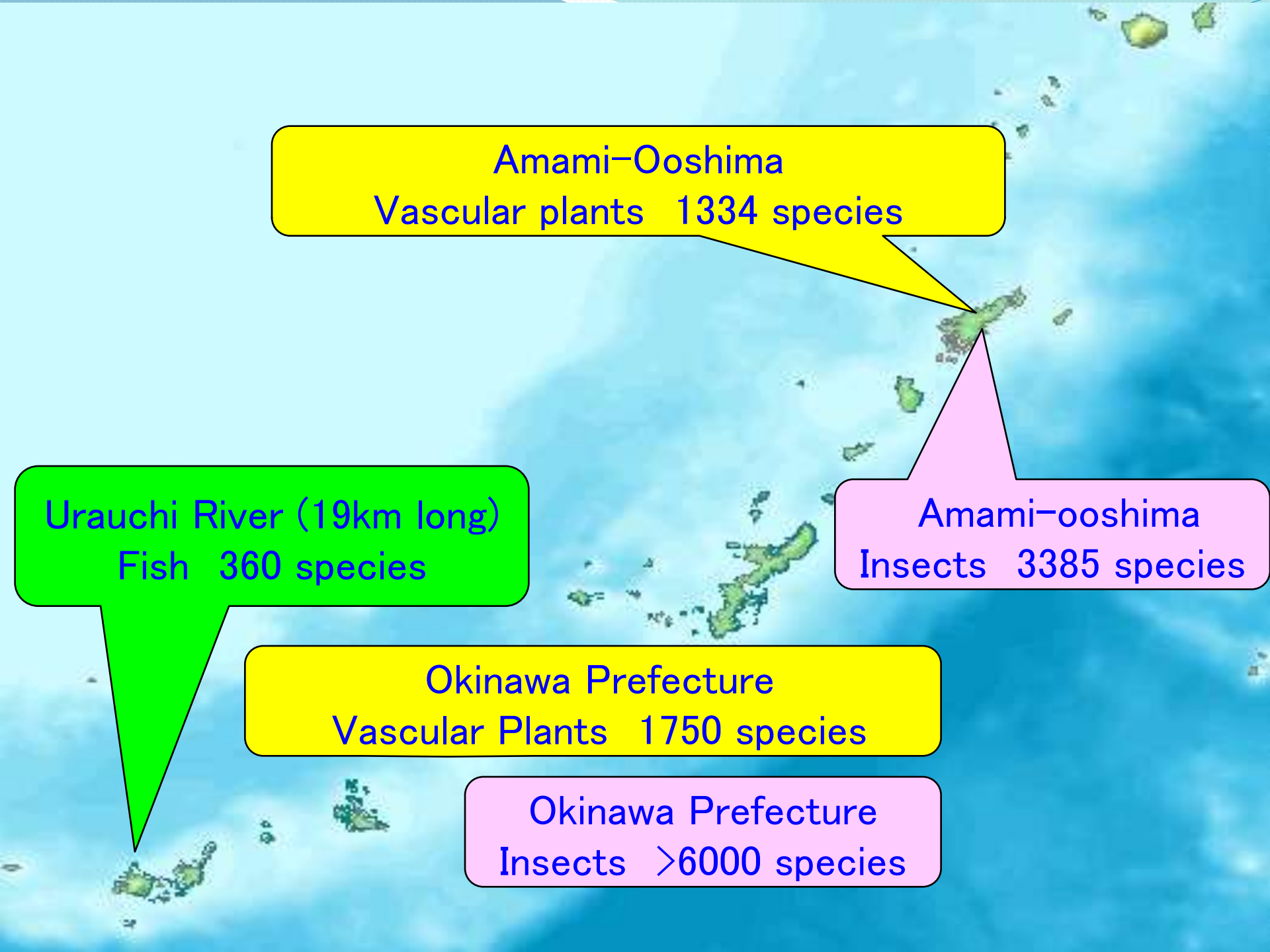
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Amami-Ooshima
Vascular plants 1334 species

Urauchi River (19km long)
Fish 360 species

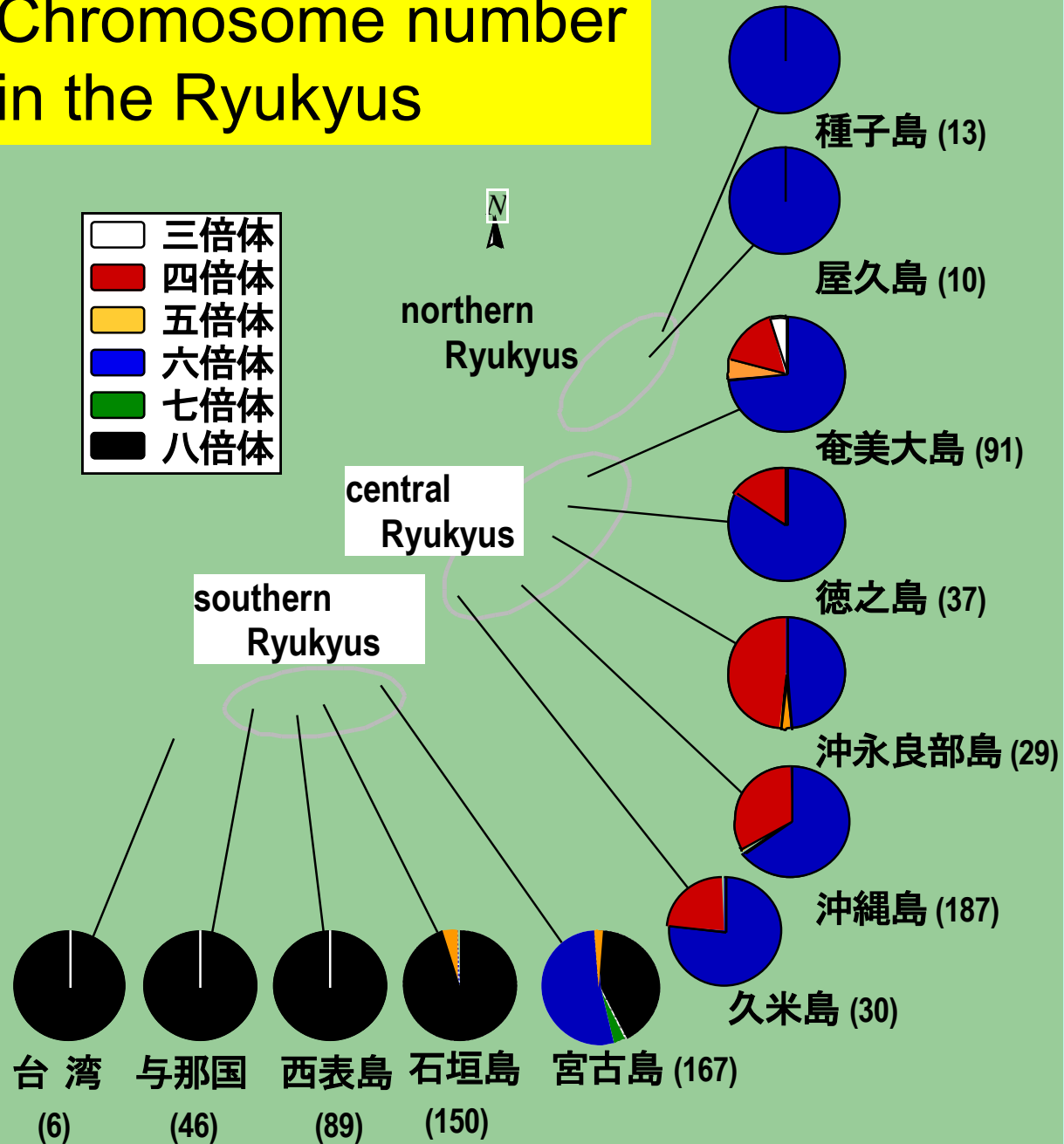
Amami-ooshima
Insects 3385 species

Okinawa Prefecture
Vascular Plants 1750 species

Okinawa Prefecture
Insects >6000 species



Chromosome number in the Ryukyus



Polyhaploids of
Ixeris nakazonei

$2n=32$

⋮

$2n=64$

Denda and Yokota (2004)

Closely related cicada species of the genus *Platypleura*

P. yayeyamana



P. kaempferi



P. kuroiwae



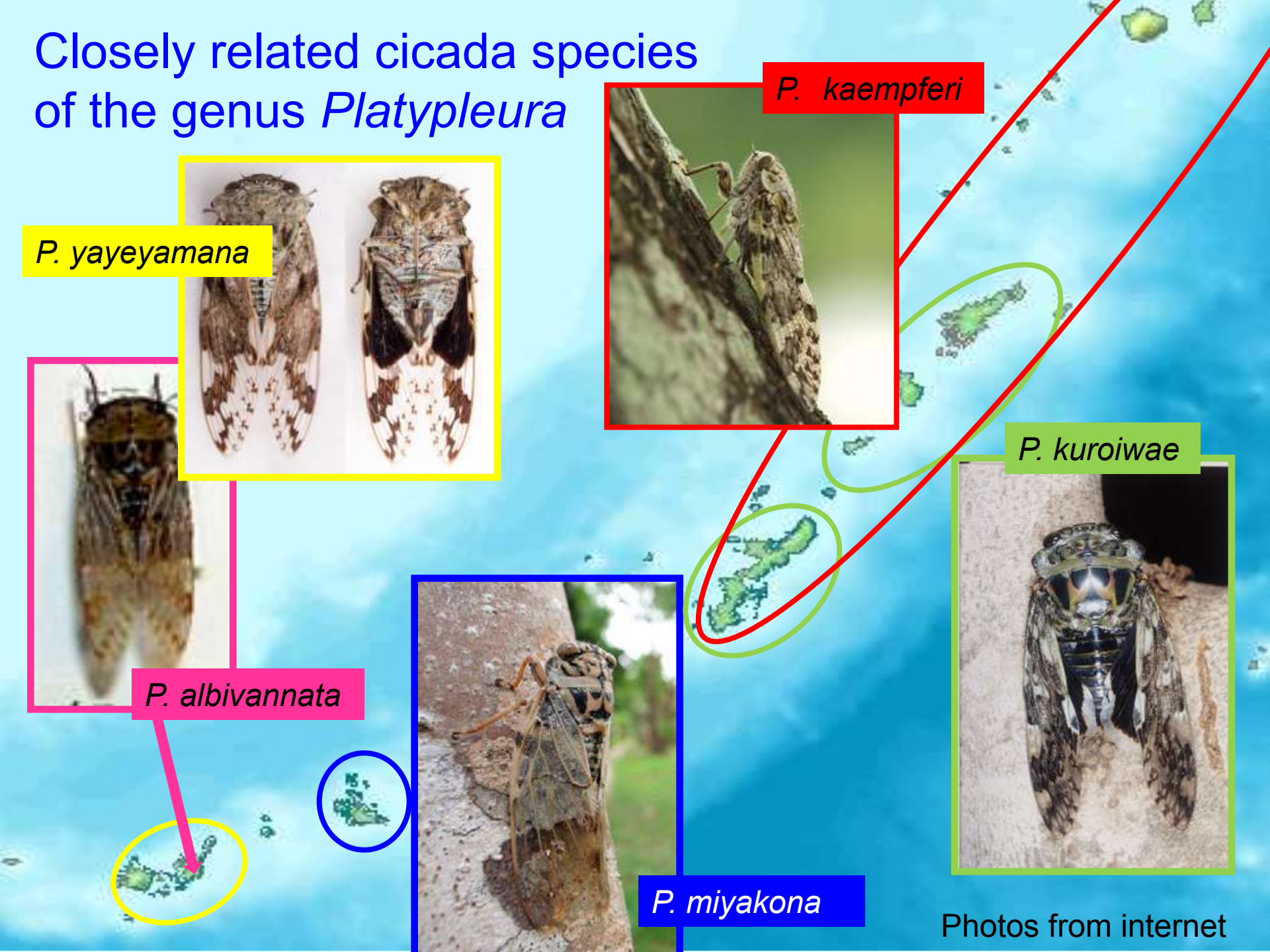
P. albivannata



P. miyakona



Photos from internet



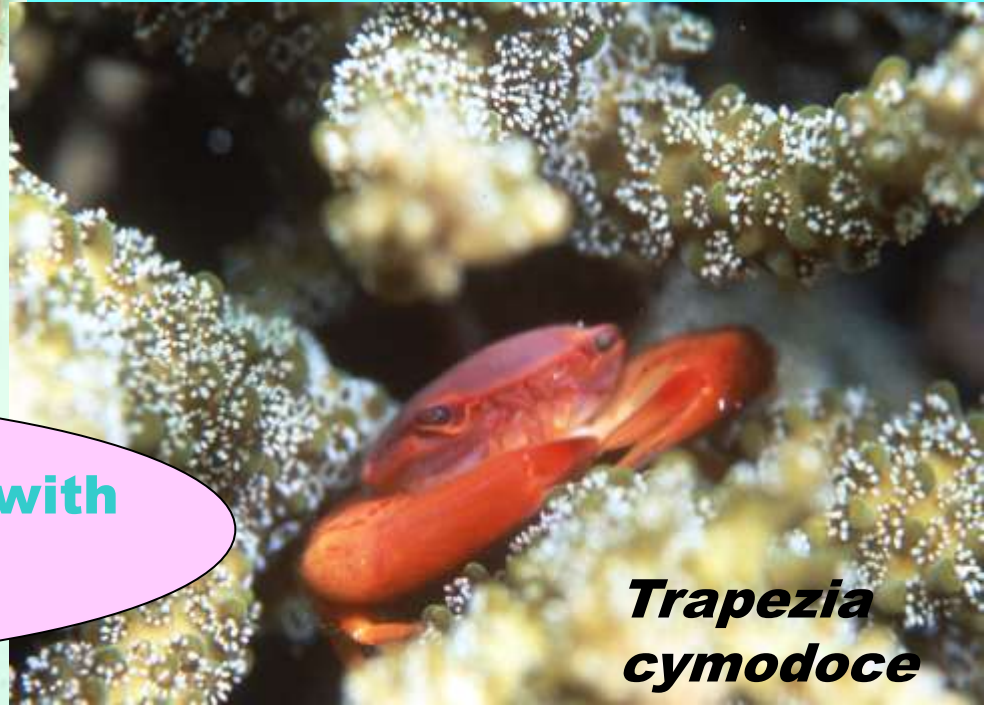
Pocillopora damicornis



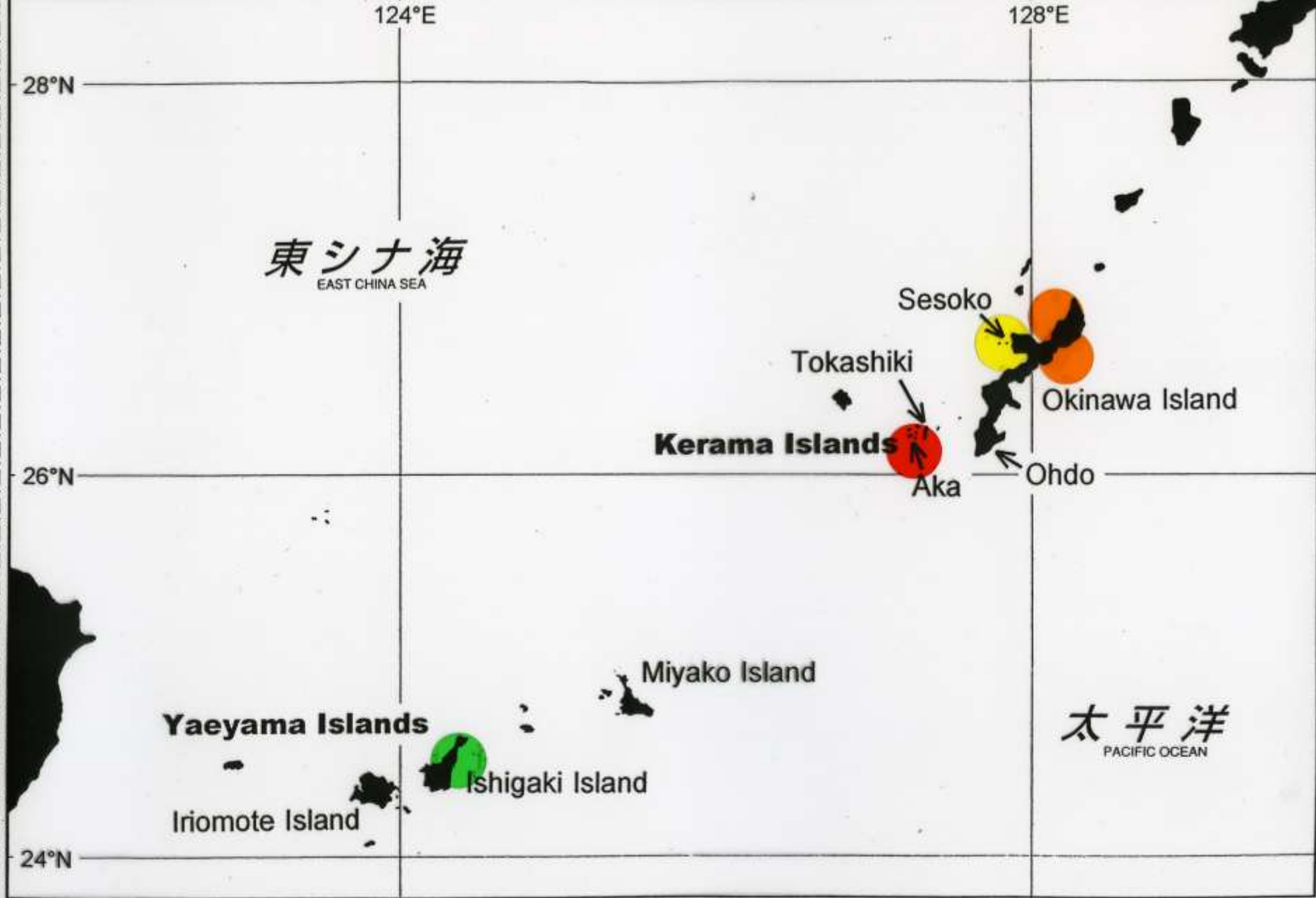


Several *Trapezia* species are coexisting in a large colony
Why and how can several closely related species coexist?

Small animals associated with *Pocillopora damicornis*



***Trapezia*
*cymodoce***



Pocillopora damicornis collected in the several sites in Okinawa for genetic study.

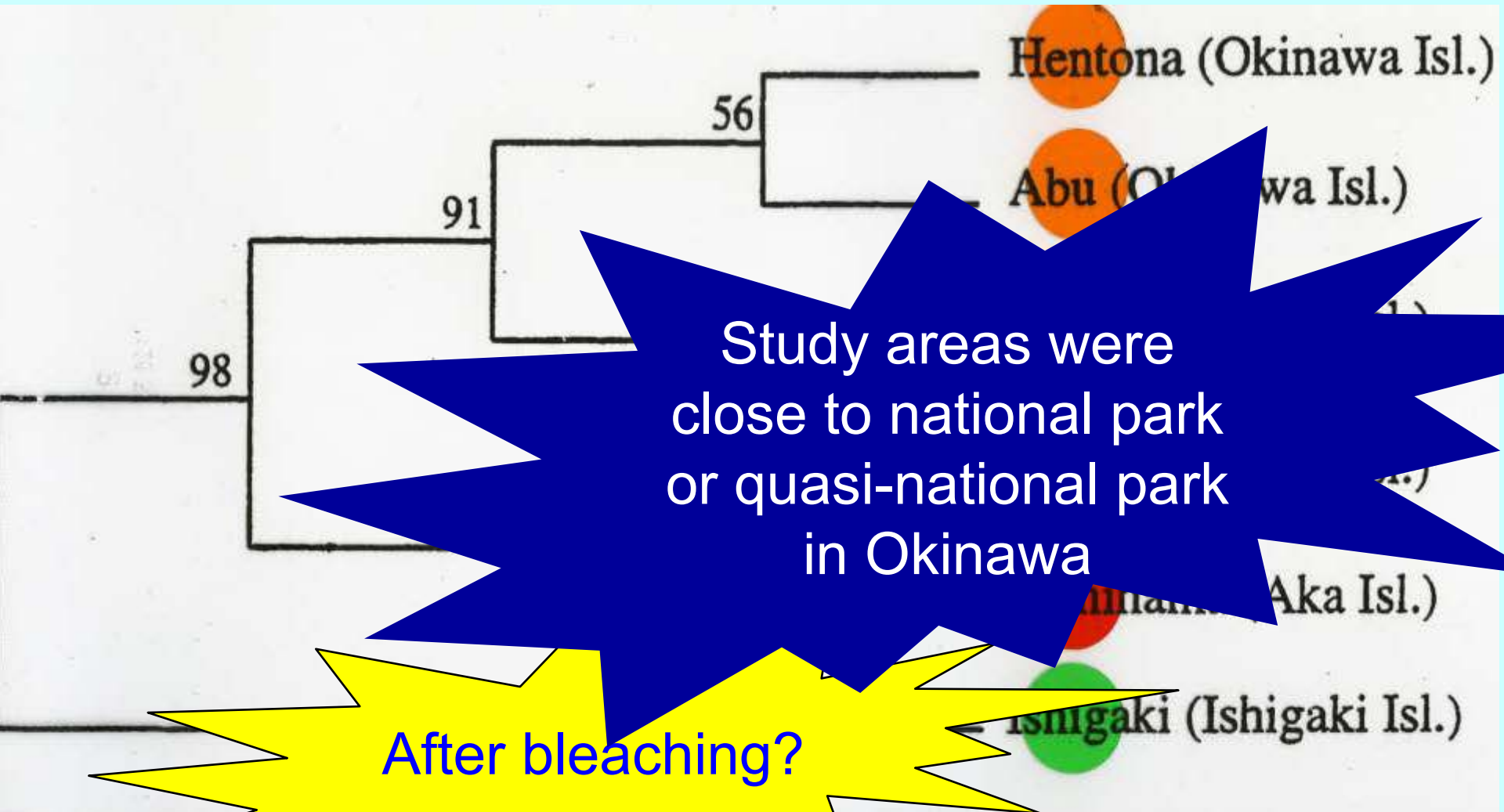


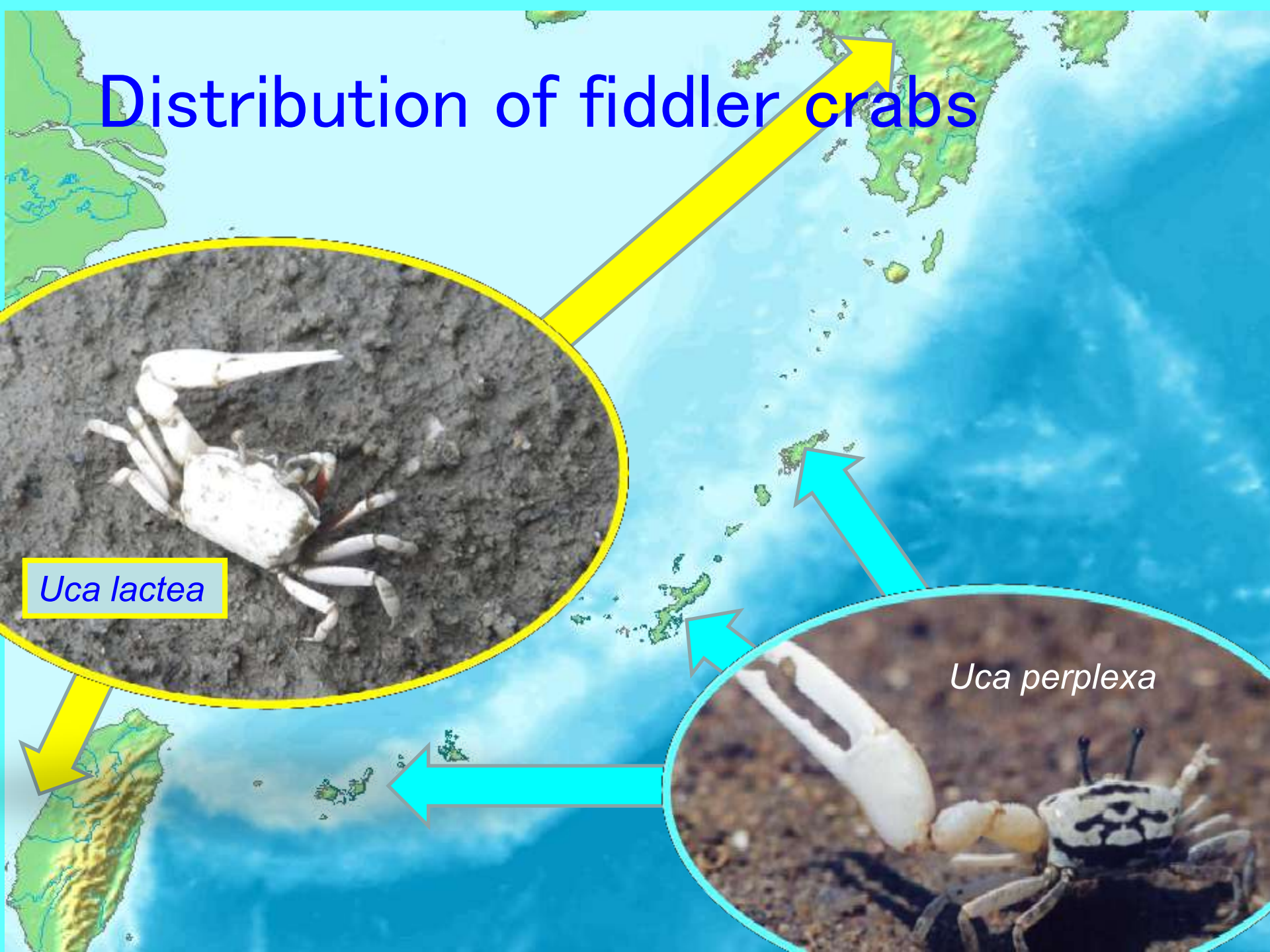
Fig. 2 *Pocillopora damicornis*. Neighbor-joining tree showing pattern of similarity expressed by Nei's unbiased genetic distance among six populations collected around four islands. Bootstrap values are from a consensus tree

A new soldier crab species in Okinawa described in 2010
Mictyris brevidactylus → *Mictyris guinotae*

**Protected area in
Taiwan**



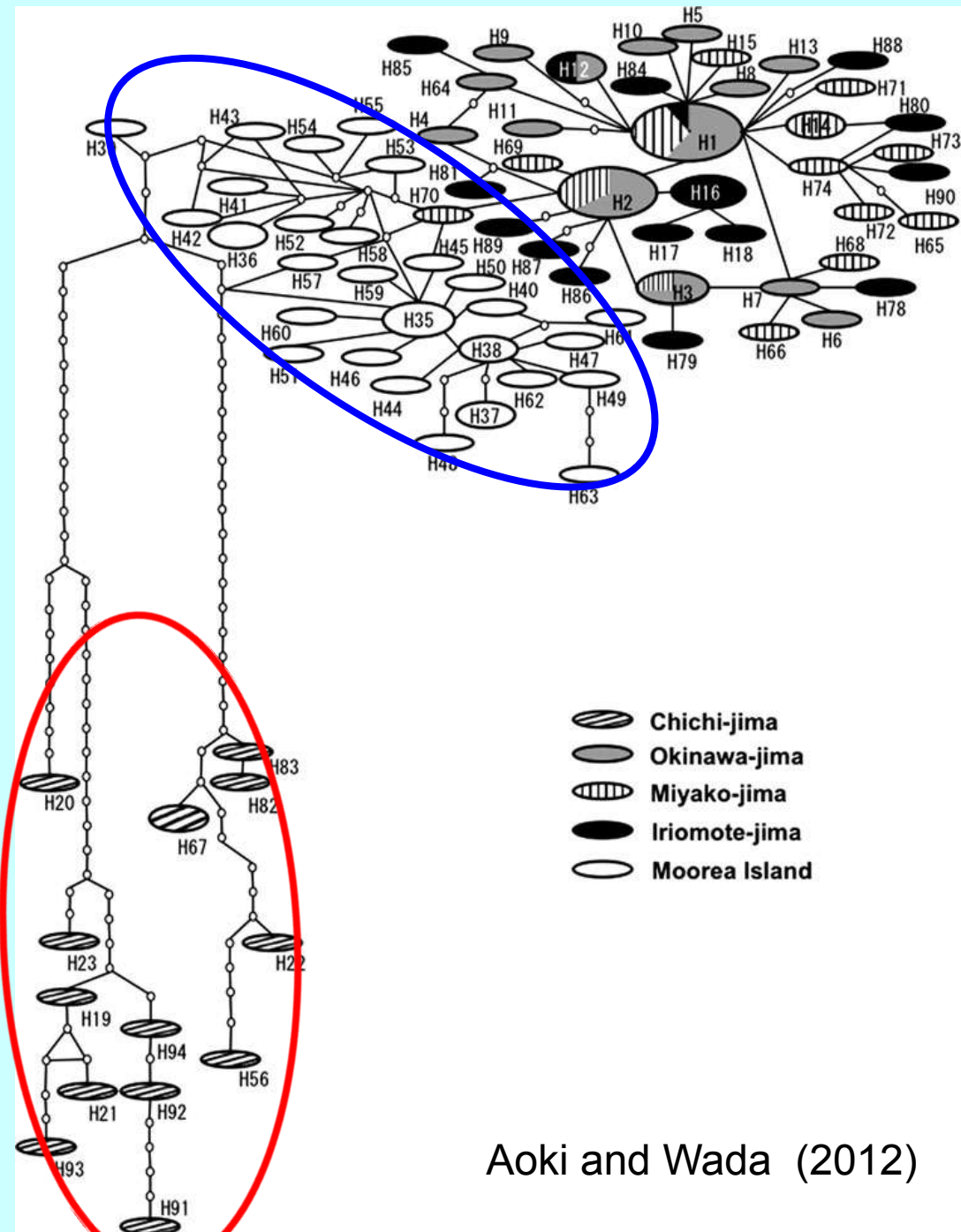
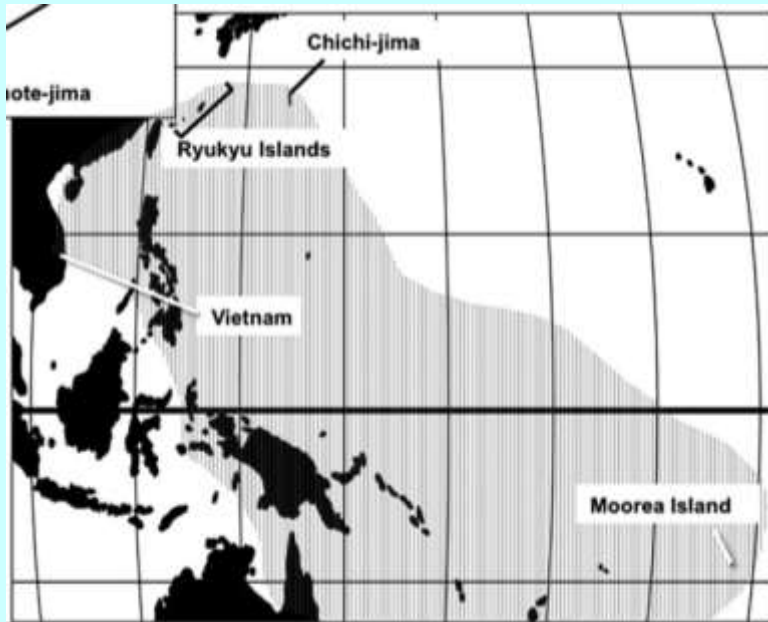
Distribution of fiddler crabs



Uca lactea

Uca perplexa

Distribution of a fiddler crab species



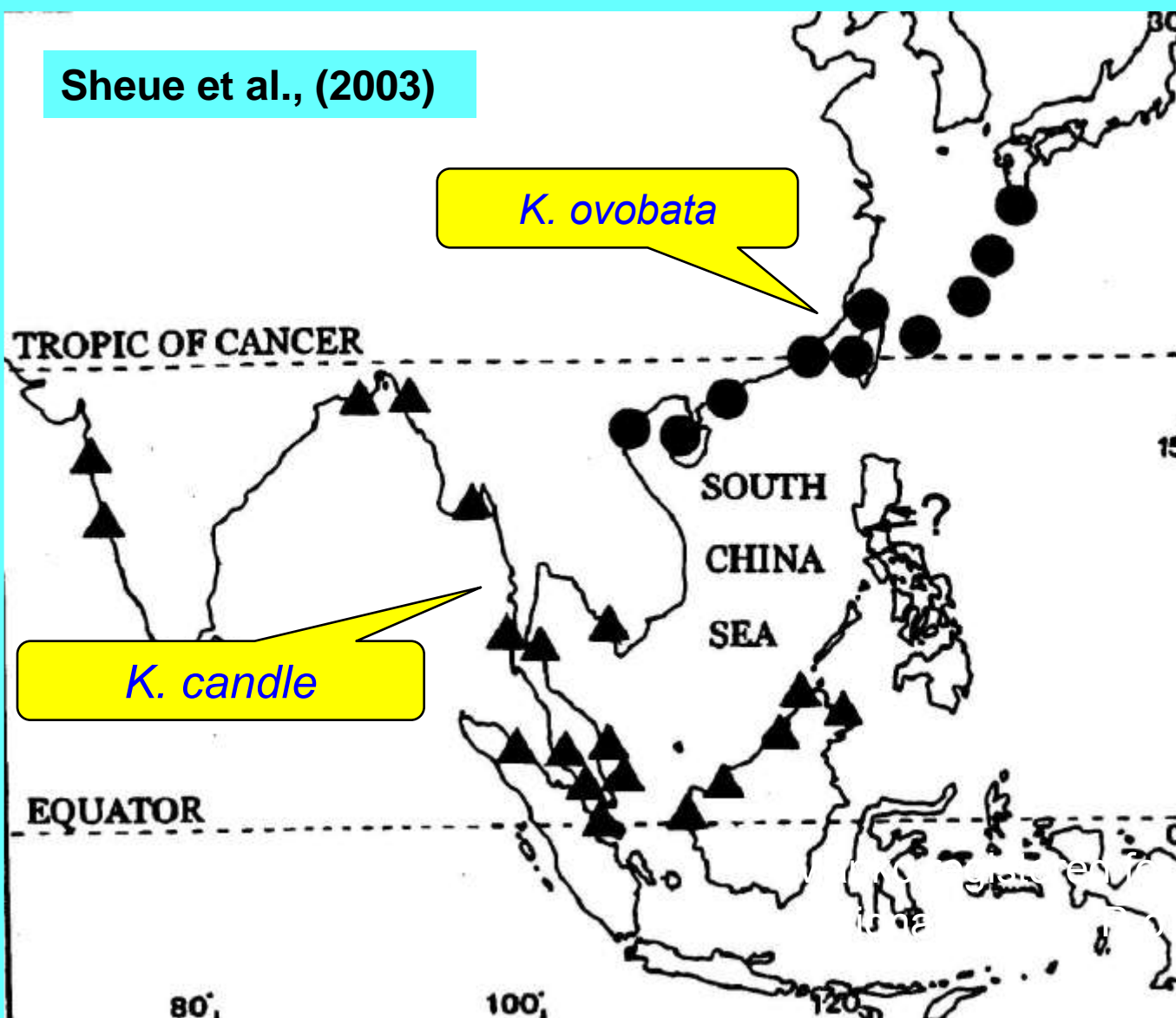
Aoki and Wada (2012)

Mangrove

Sheue et al., (2003)

K. ovobata

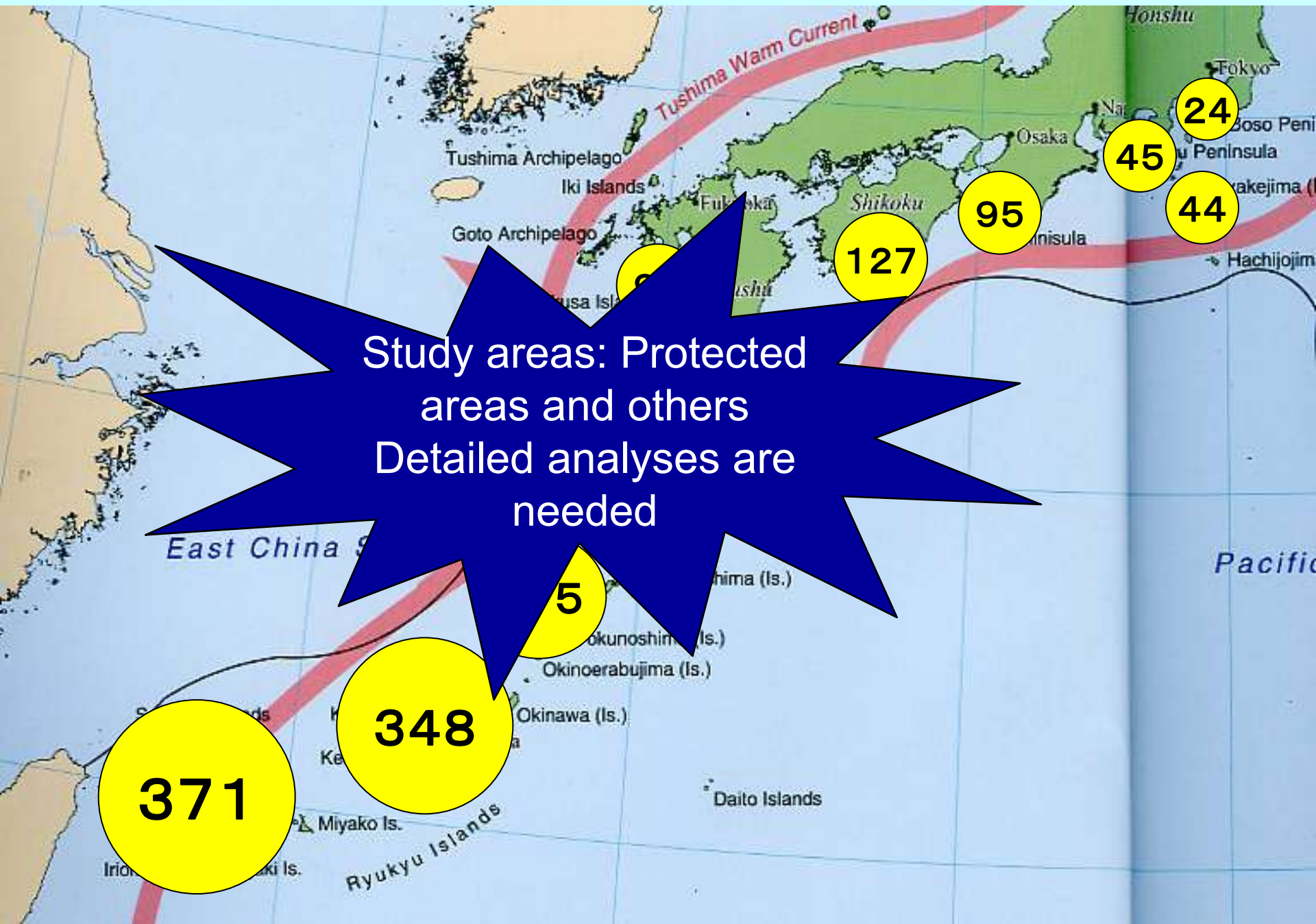
K. ovobata (2003)



K. candle

the Ramsar Convention:
Protection Area

Species richness of hermatypic corals in Japan (Nishihira and Veron, 1995)

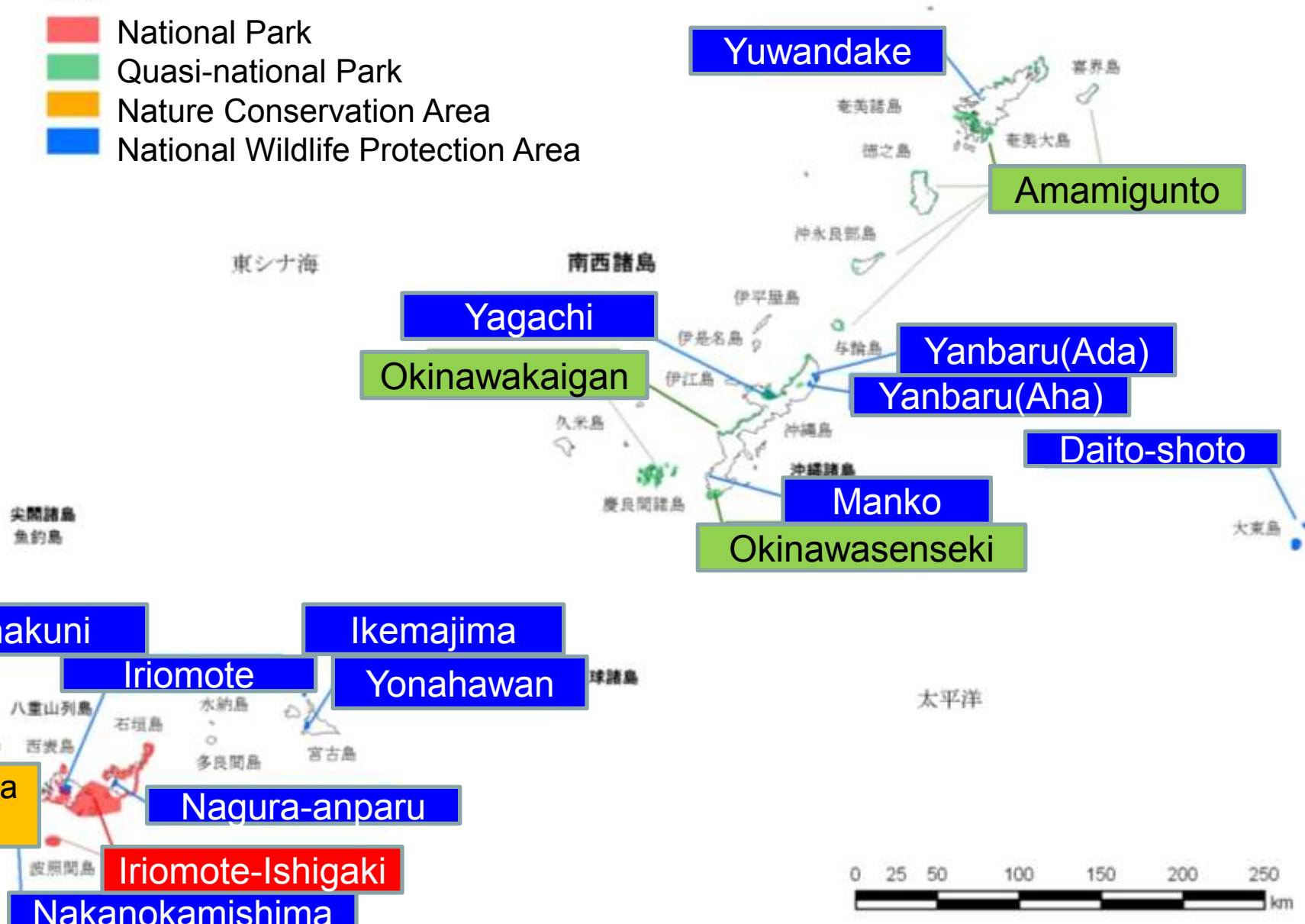


Protected areas in the Ryukyus



凡例

- National Park
- Quasi-national Park
- Nature Conservation Area
- National Wildlife Protection Area



Conclusion

- Biodiversity has been an important research topic in any protected areas in Okinawa and surrounding areas
- However, researches on biodiversity in protected areas are insufficient
- Future keyword: Ecosystem networks among protected areas and accumulation of scientific information in protected areas
- International networks