Information Sharing Networks and Rates of Incidental Catch

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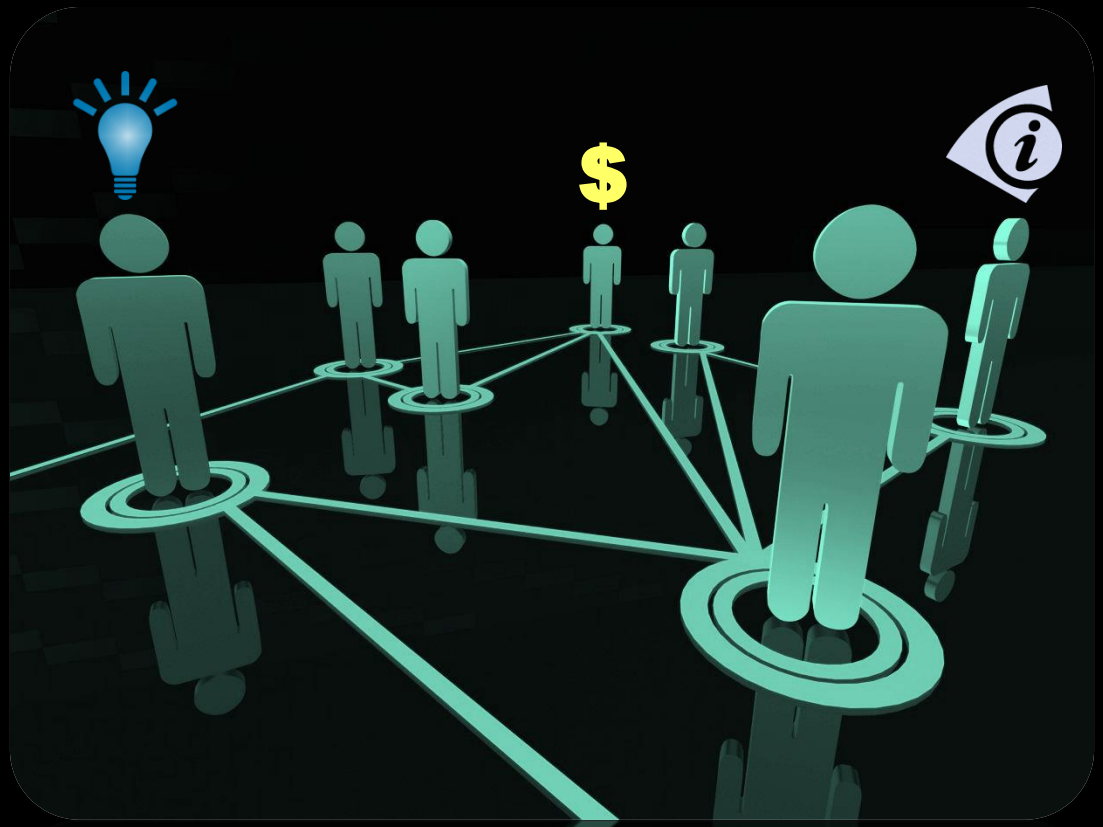
Social Networks Matter



Social Networks and Fisheries

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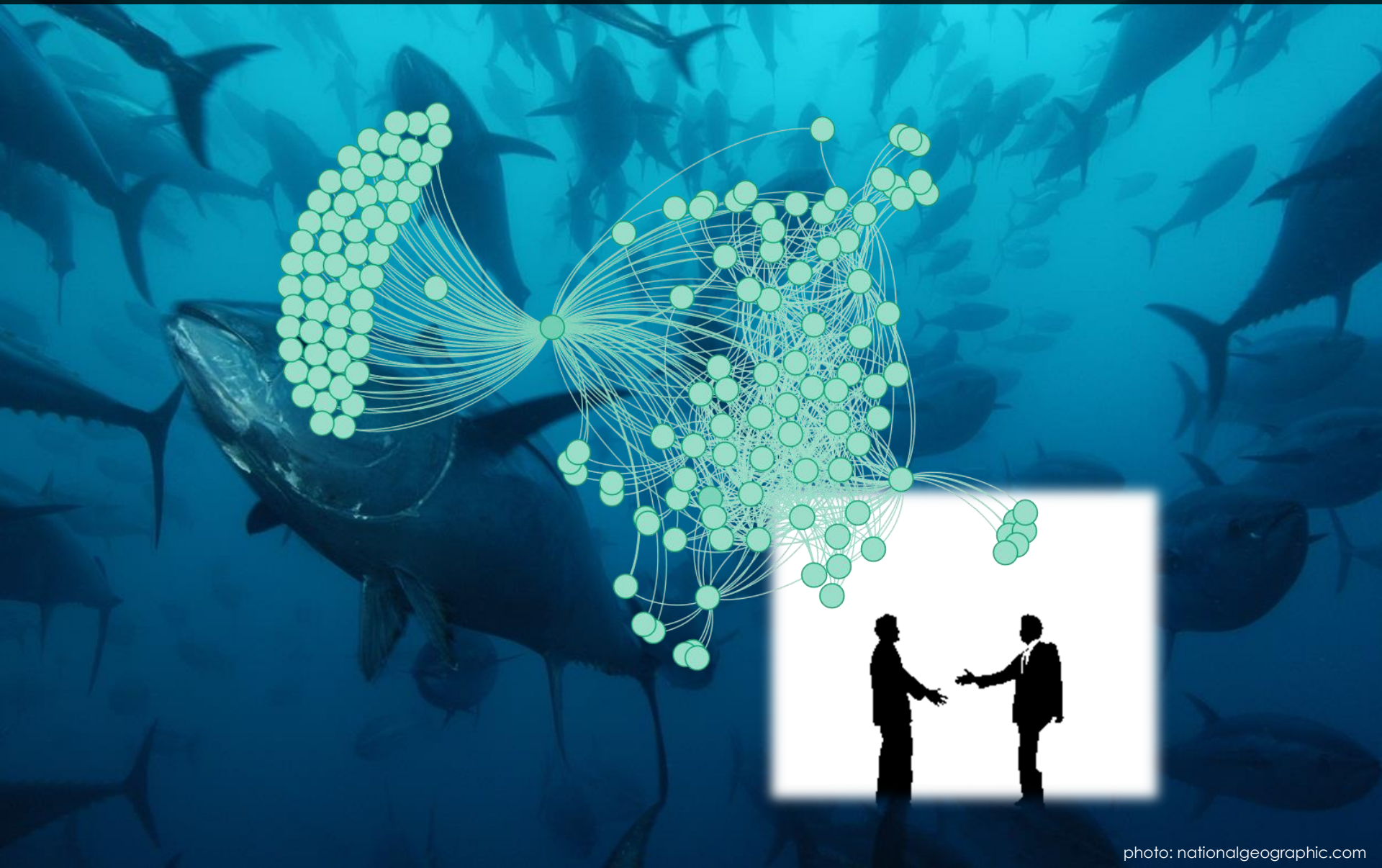


photo: nationalgeographic.com

Social Networks and Fisheries

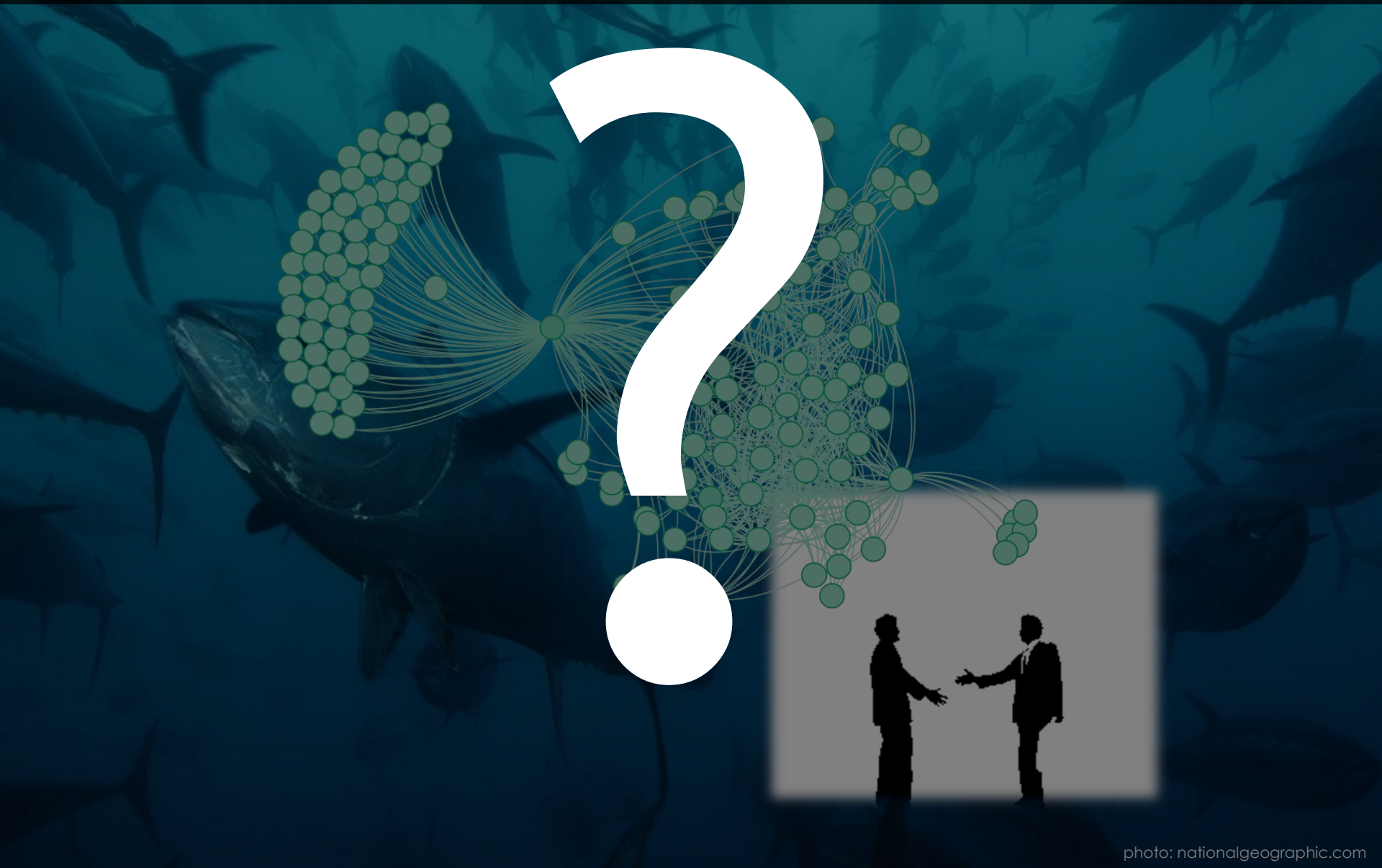


photo: nationalgeographic.com

Study System

Hawaii's Pelagic Longline Fishery (HLF)

Targets: Tuna & Swordfish

Vietnamese-American (V-A)
~ 56 vessels
European-American (E-A)
~ 41 vessels
Korean-American (K-A)
~ 24 vessels

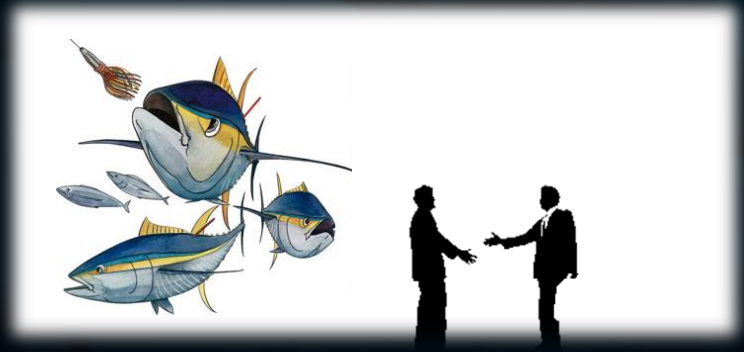


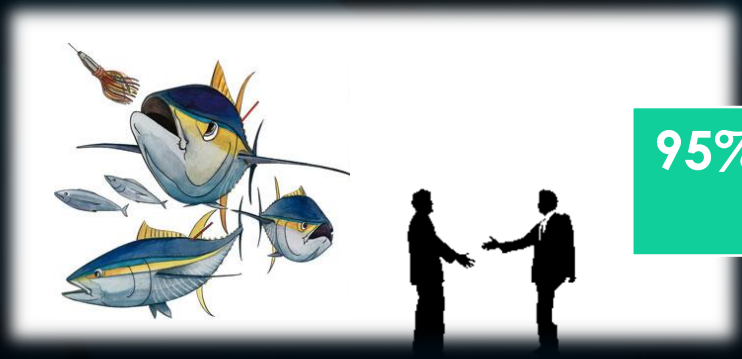
photo: nationalgeographic.com

Social Network Data

Hawaii's Pelagic Longline Fishery (HLF)

Who do you share useful information with about fishing that you feel is valuable for your fishing success?

Other fishers, industry leaders, scientists, government or management officials, people from other ethnic groups?



95% response rate

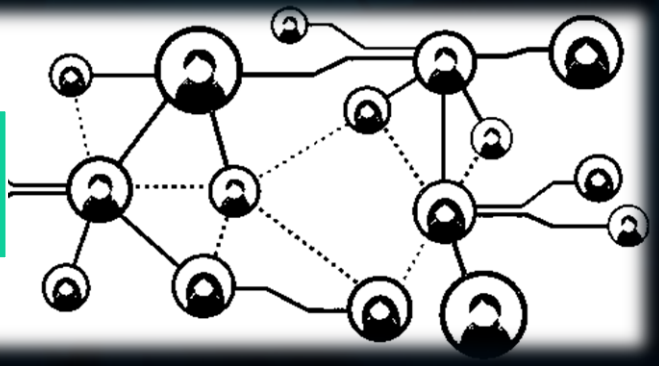


photo: nationalgeographic.com

Research Questions

NETWORK CHARACTERISTICS 2013, *Ecology & Society*

1. *Structure*: How are fishers connected?

NETWORK ANTECEDANTS 2014, *Env. Management (in review)*

2. *Ties/locations*: Who is well connected, and what are the social capital implications?

NETWORK OUTCOMES In prep.

3. *Environmental*: Rates of incidental catch?
4. *Economic*: Fisher productivity?

photo: nationalgeographic.com

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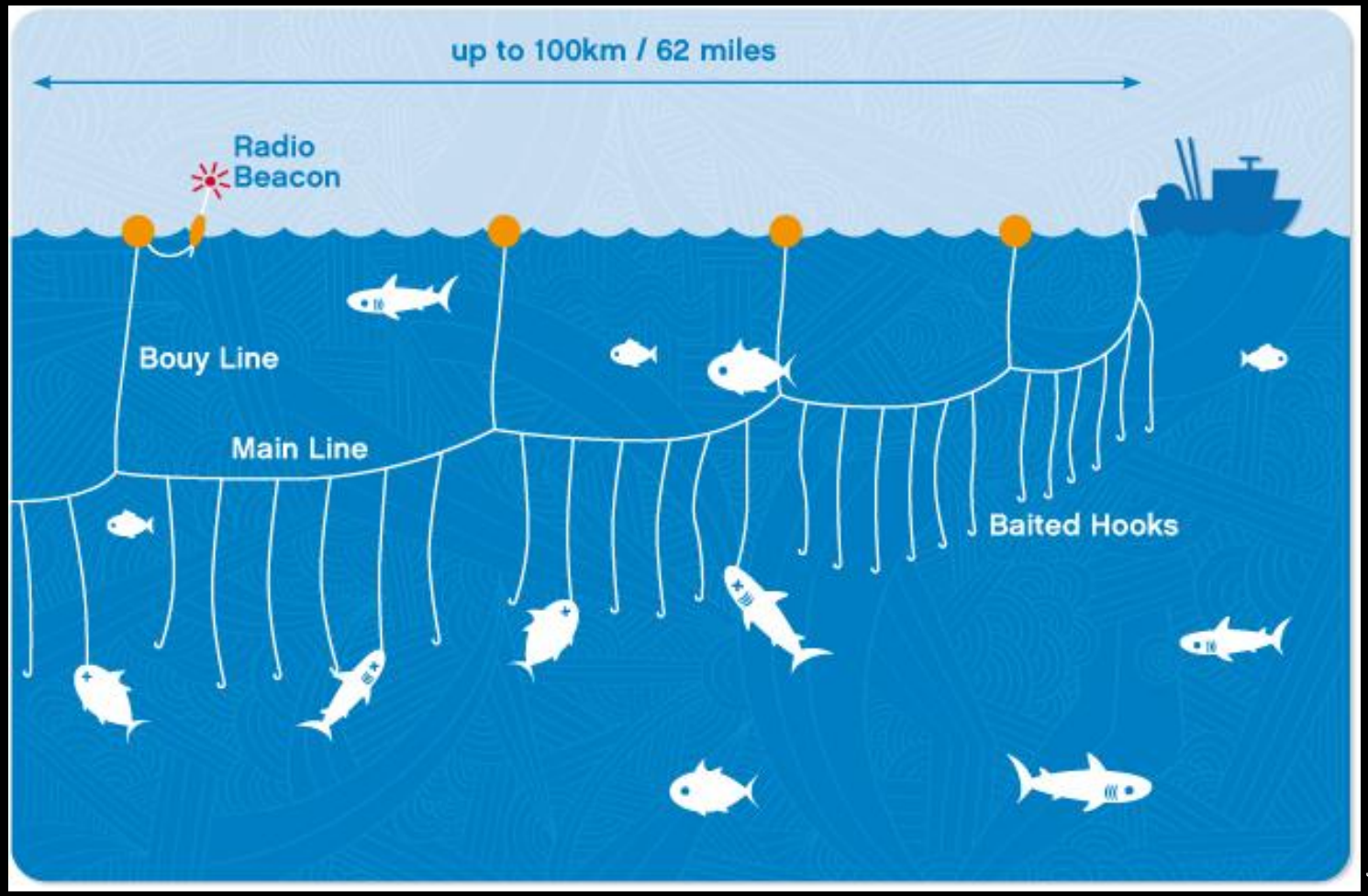
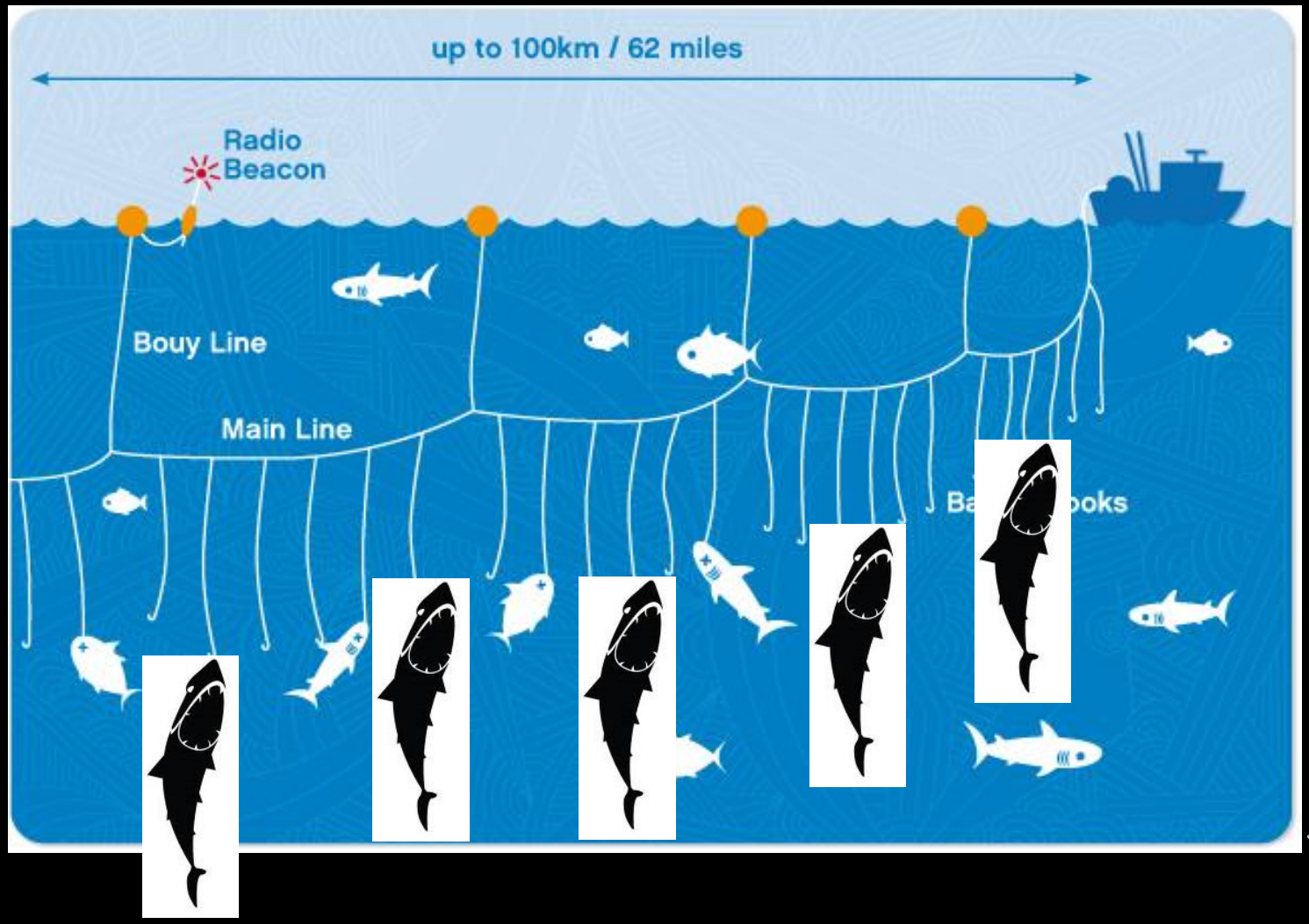
Bycatch: an environmental and economic problem

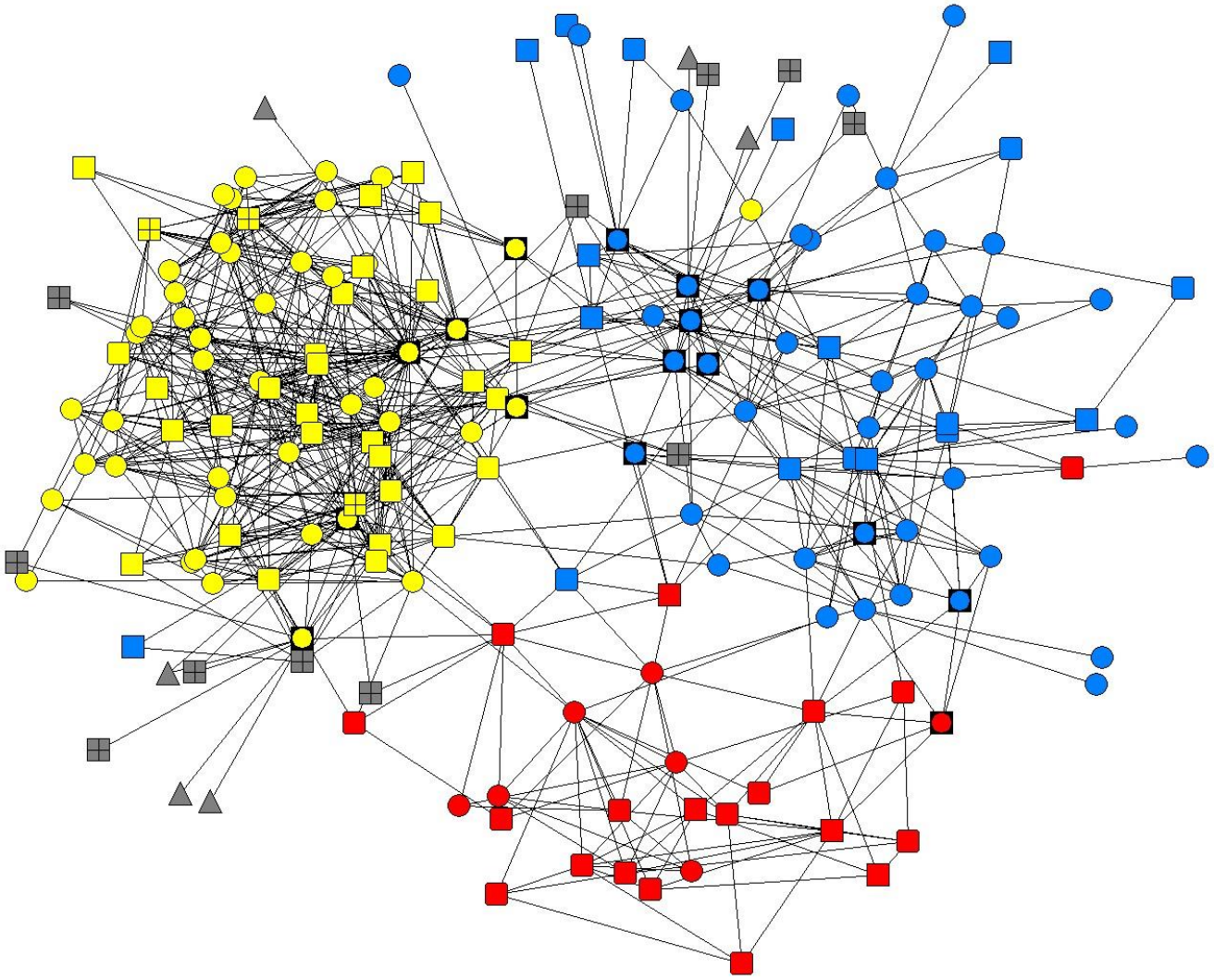


Bycatch: an environmental and economic problem



Information sharing to mitigate bycatch?

HLF Information Sharing Network



E-A group members

V-A group members

K-A group members

Ind. Lead/Govt. Official

Vessel Owner

Captain

Owner/Operator

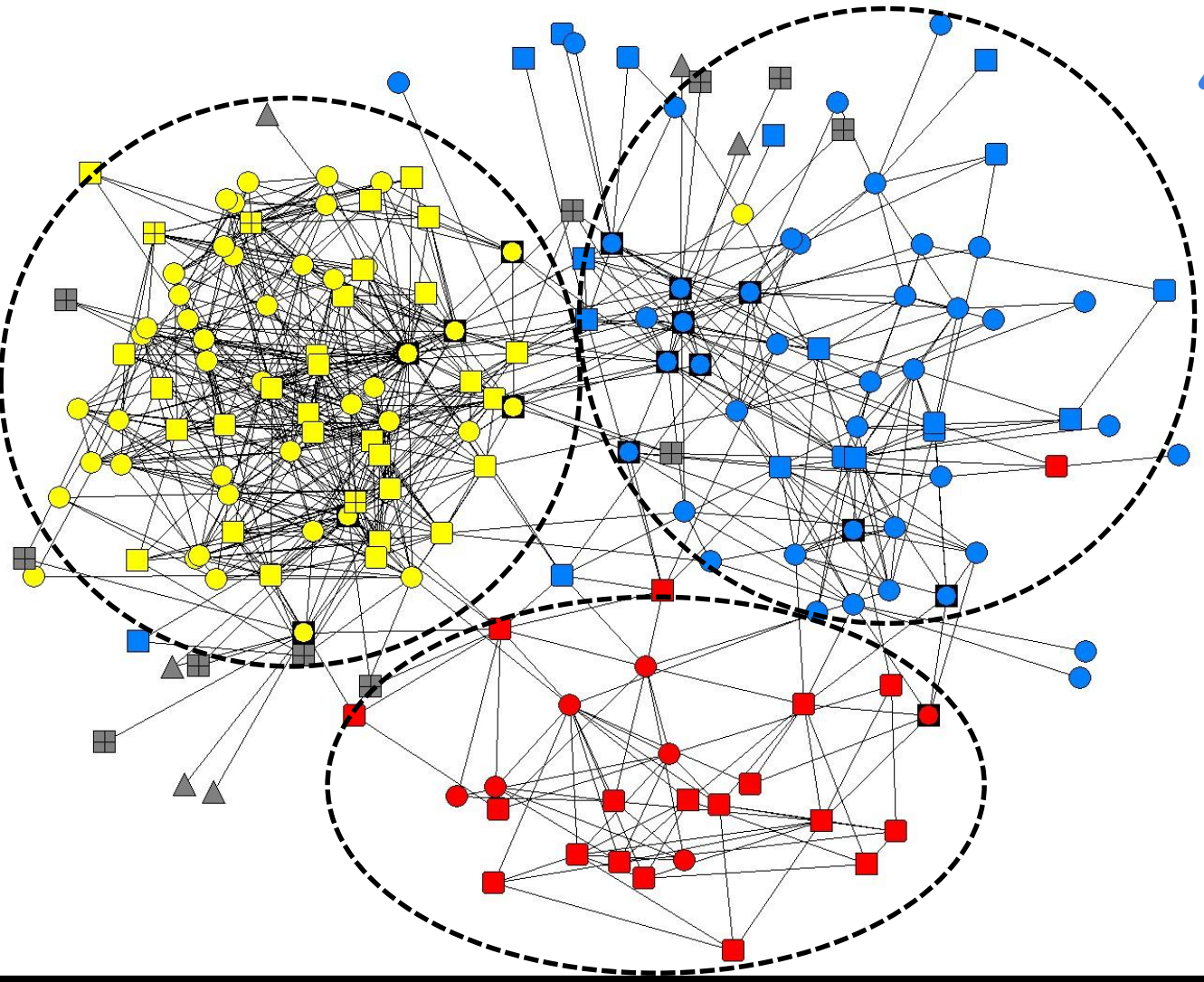
Govt./Mgmt. Official

Industry Leader

Owner & Industry Leader

Adapted from Barnes-Mauthe et al. 2013. *Ecology and Society* **18**(1):23

Network Homophily



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Data & Methods

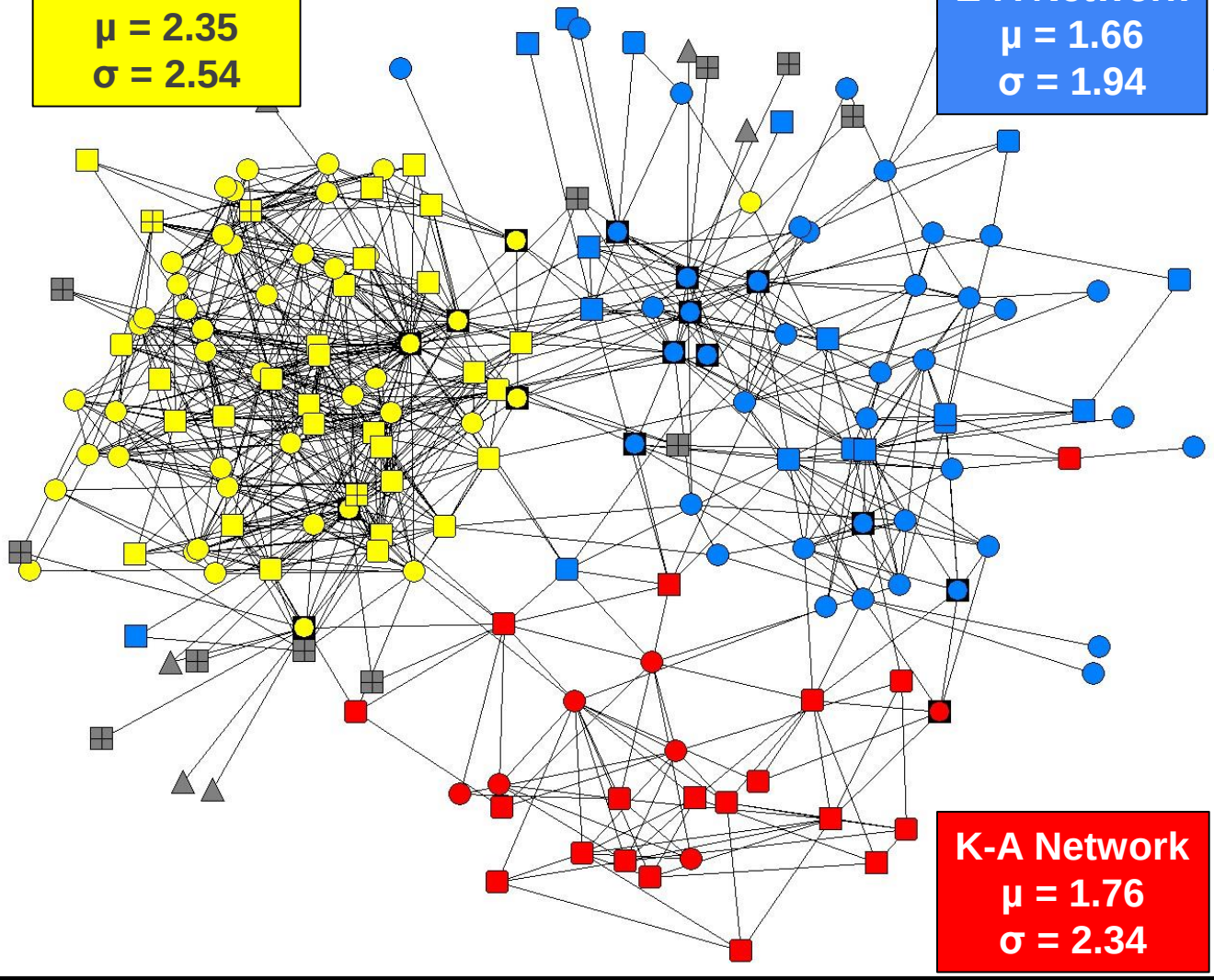
Data: Information sharing social network/socio-demographic data linked to NOAA fisheries observer data (*n* = 100 fishers)

Network Groups: defined by homophily and reciprocal components

Models: Negative Binomial Regression

- Dependent variable: shark/1,000 hooks across all bigeye tuna sets from 2008-2011 (*n* = 8,795)
- Controls: target species/1,000 hooks, vessel length, set location, soak time, temperature, bait type and seasonality
- Std. errors clustered at the individual fisher level

Shark Bycatch Rates, by Network



Barnes-Mauthe et al. *forthcoming*

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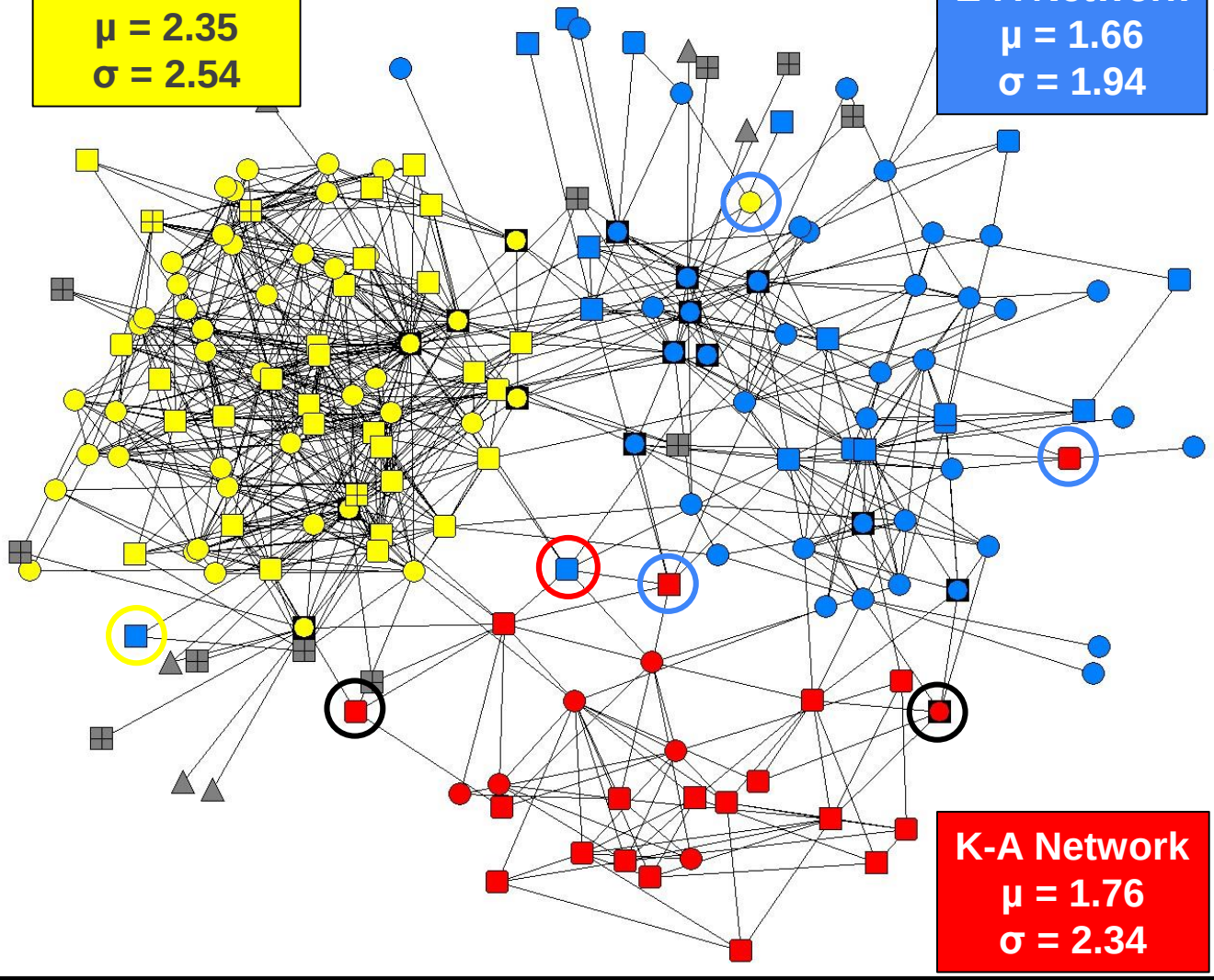

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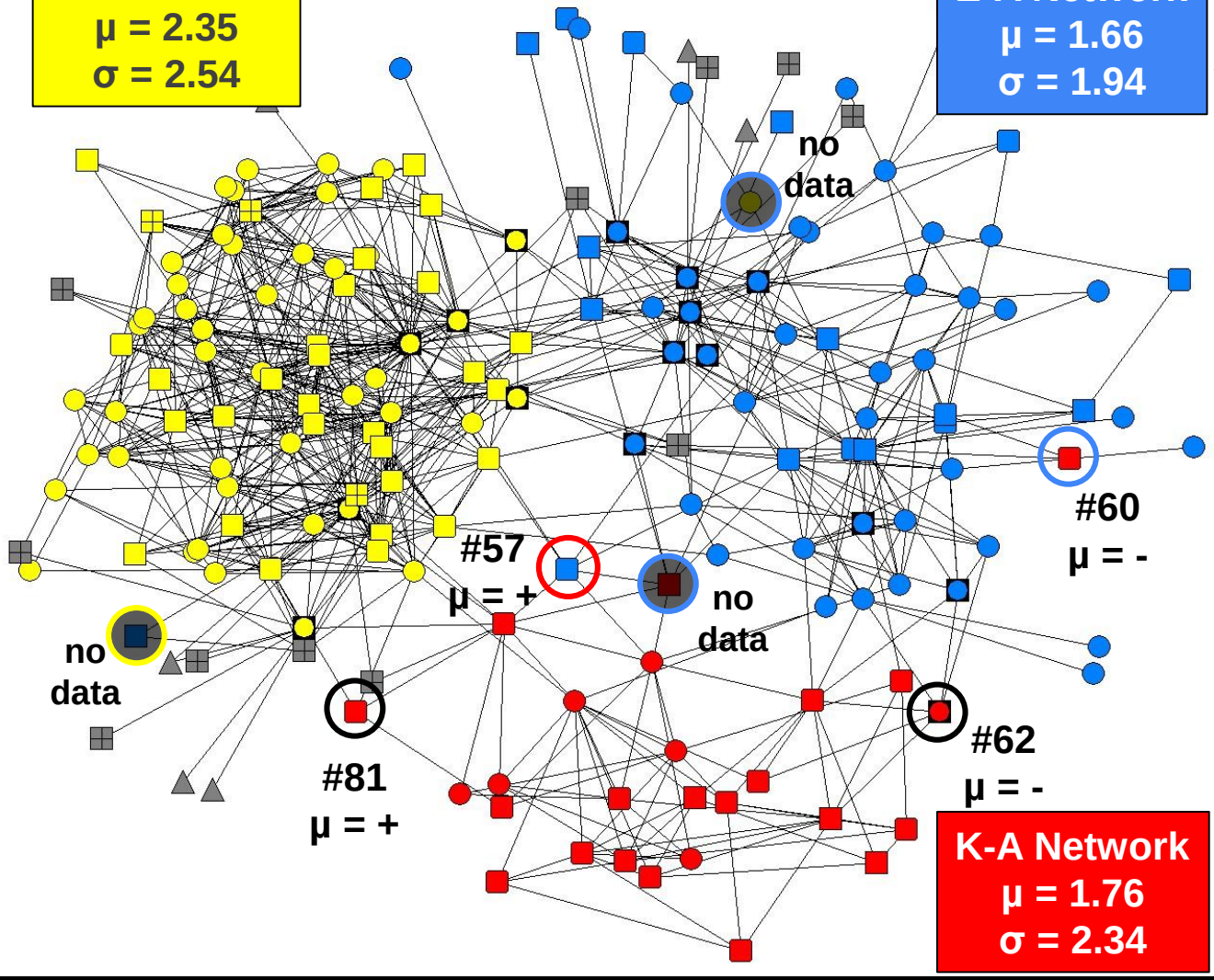

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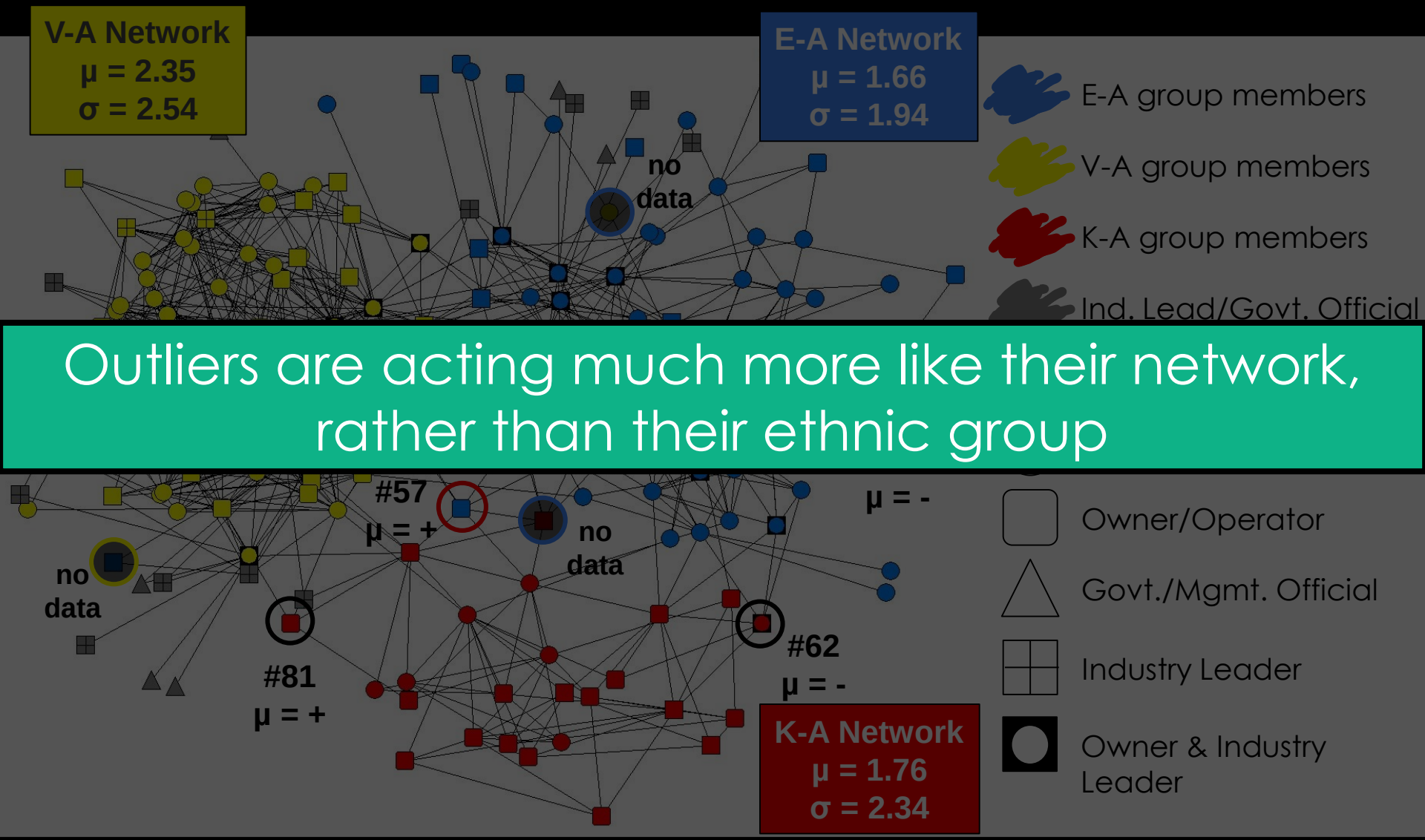

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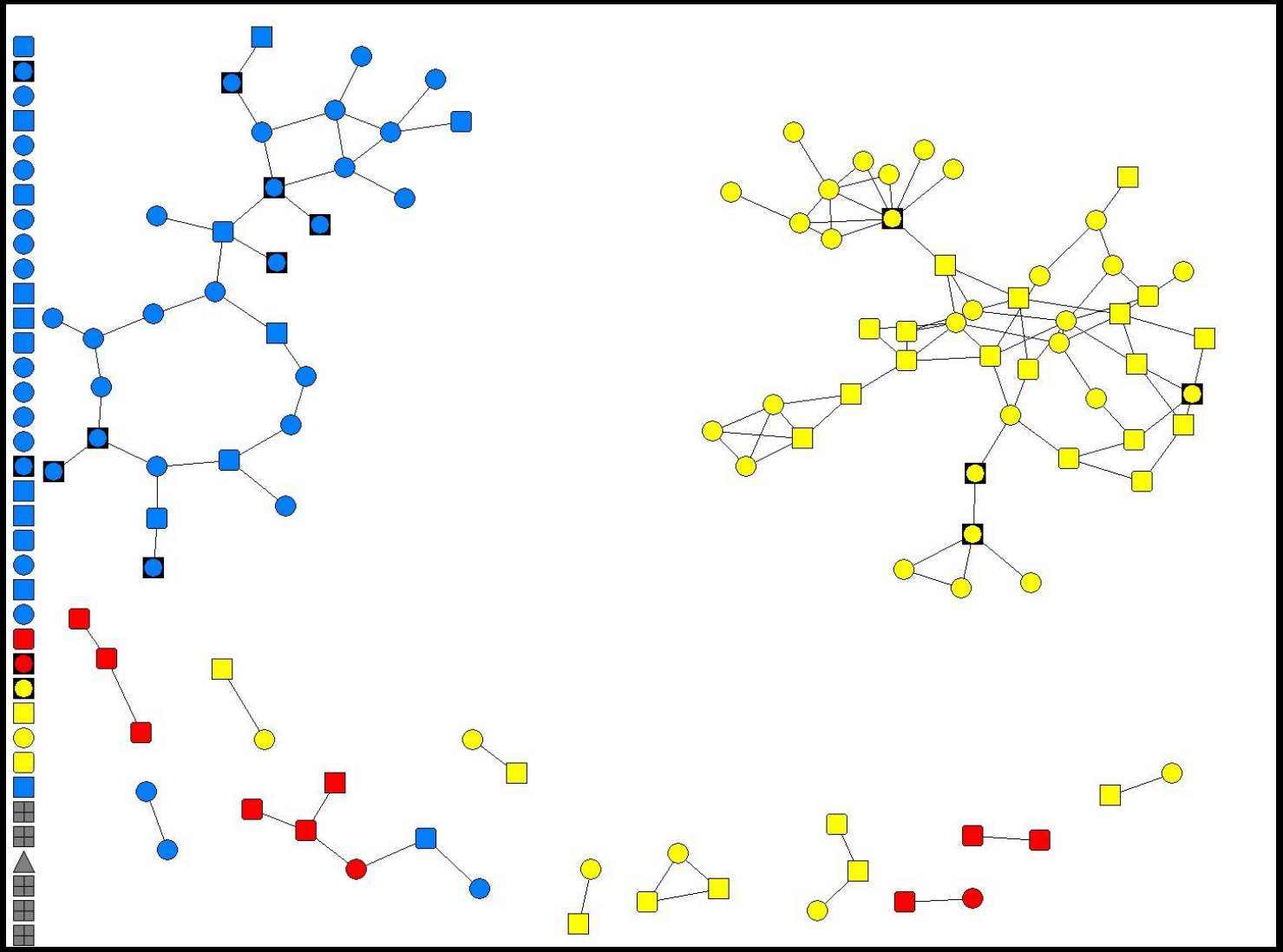
Reciprocal Ties



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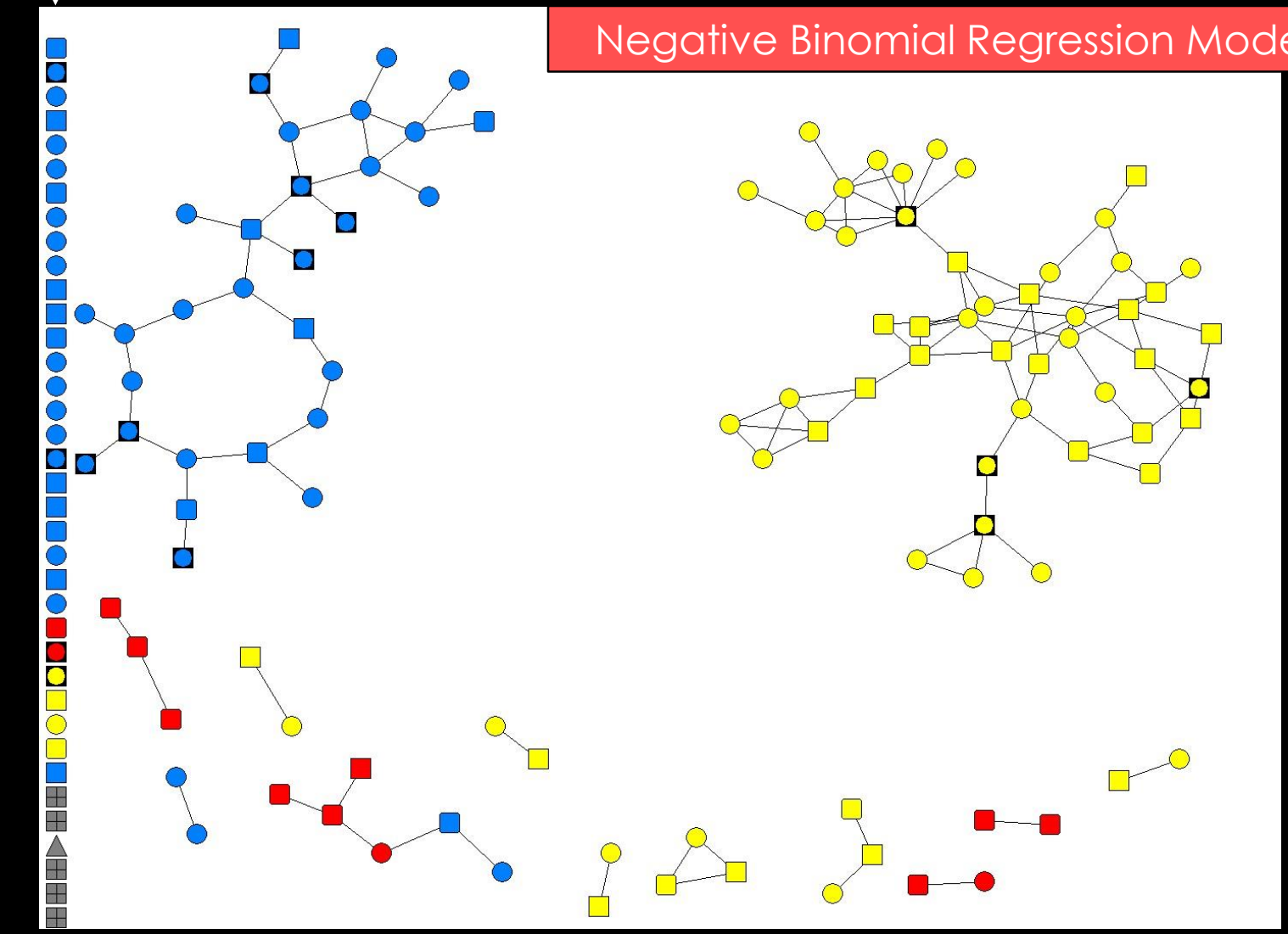

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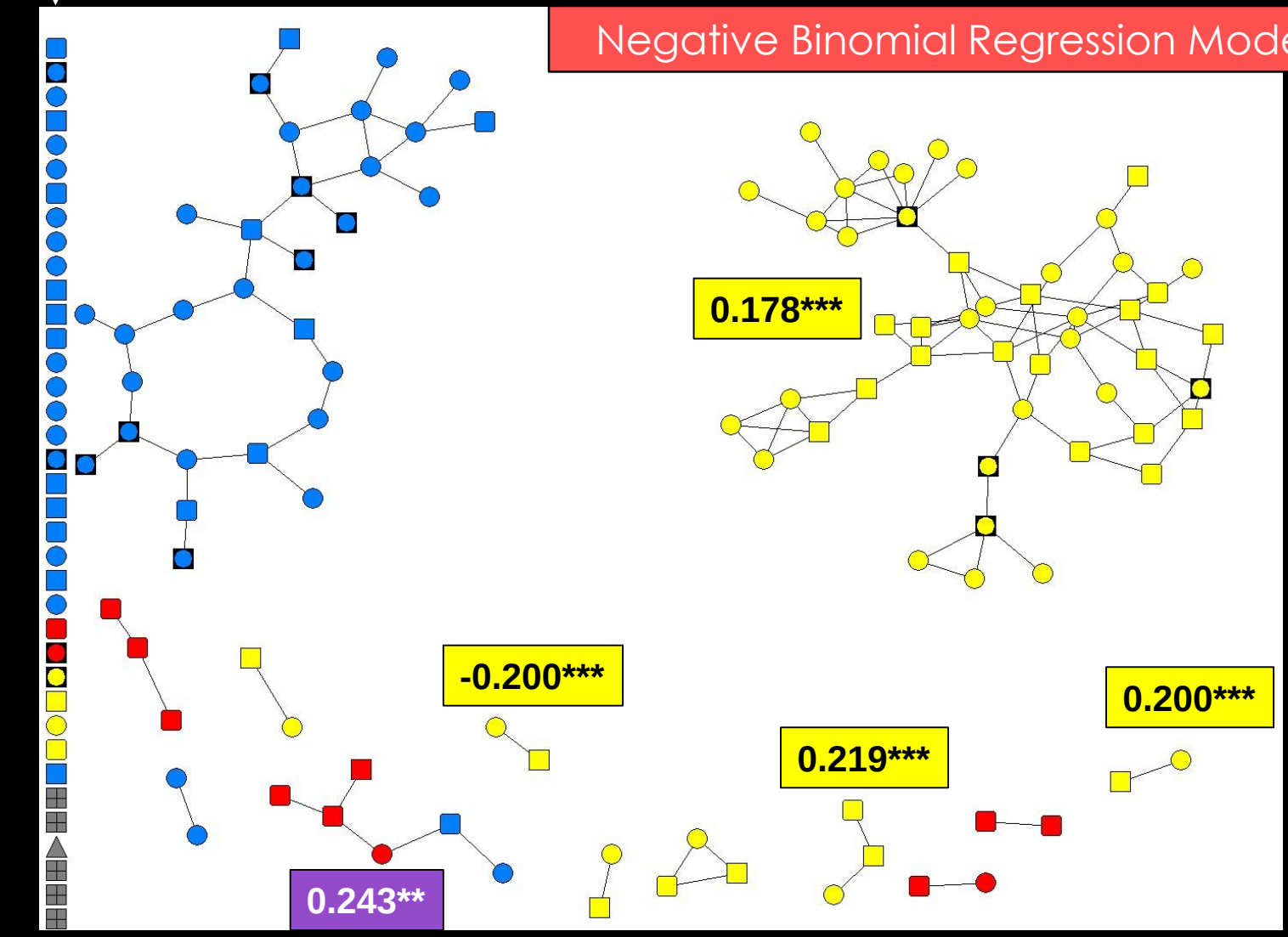

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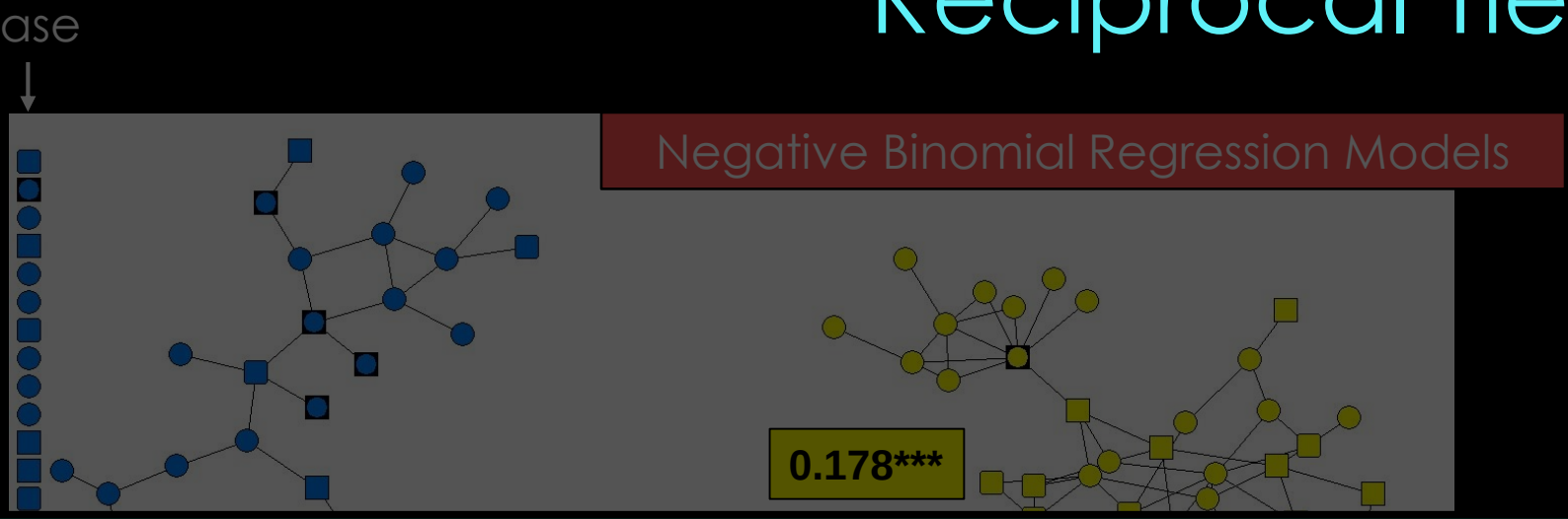
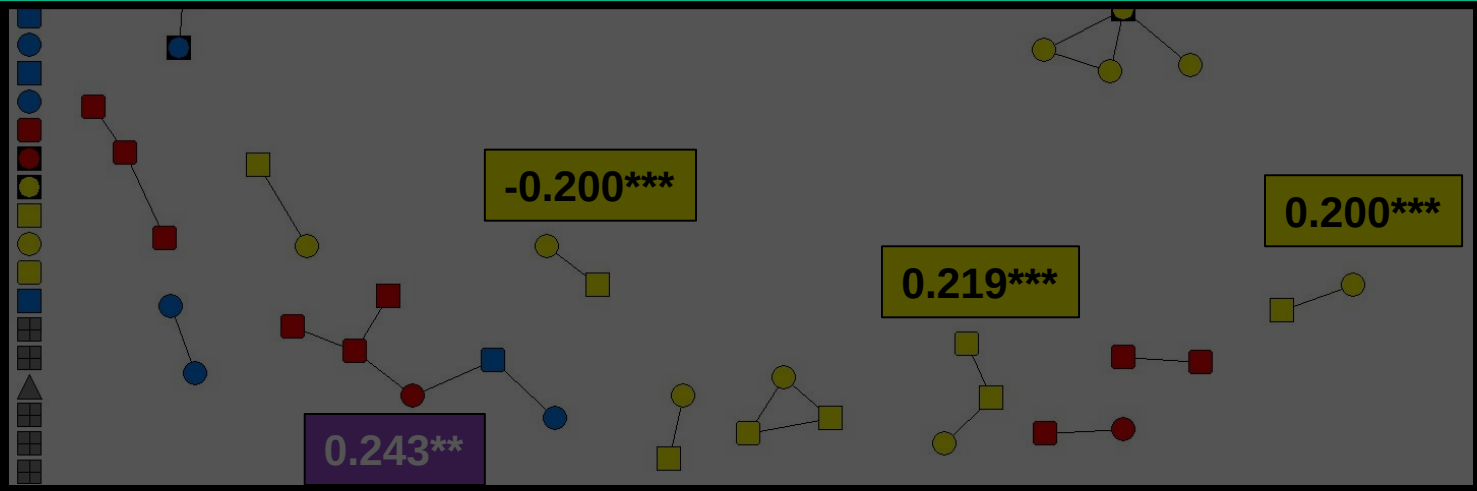


Network homophily is significantly related to shark bycatch



Barnes-Mauthe et al. *forthcoming*

Implications

Some fishers may be dynamically reacting in time and space to information received from trusted sources within their network group on strategies to mitigate bycatch, while others are not.

Why?

Mahalo!

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Photo Credits: Kolter Kalberg, Shawn Arita, Michele Barnes-Mauthe

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