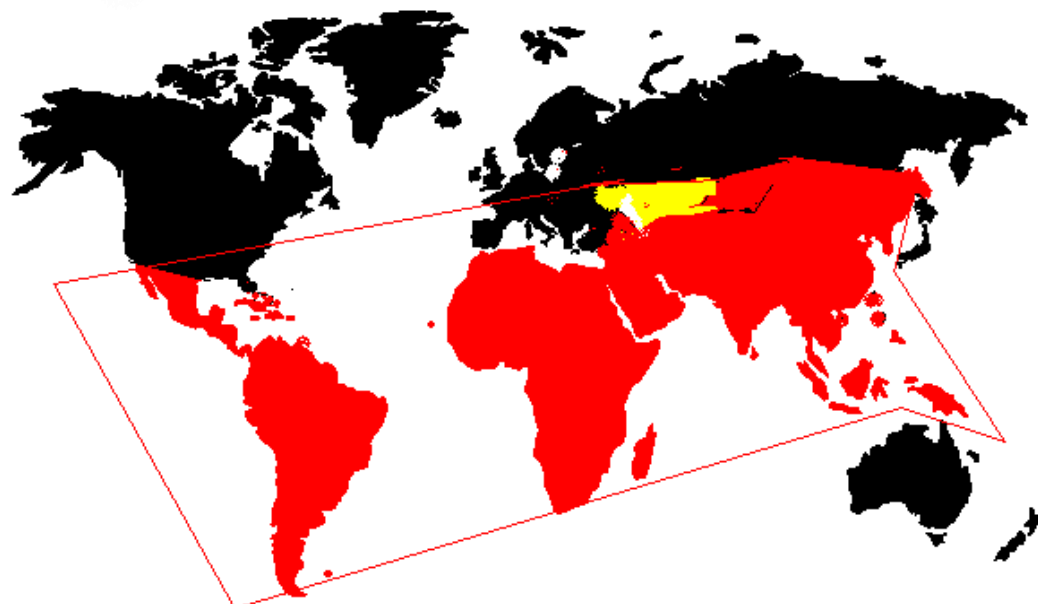




ISA GSCIS WORKSHOP 2017, HAVANA, CUBA

Exploring the Local in International Relations



**STRUCTURE OF COLLABORATION AND COOPERATION IN THE
BAJA CALIFORNIA (MÉXICO)-CALIFORNIA (USA) MEGAREGION: AN INNOVATION APPROACH**

SYLVIA MÓNICA PÉREZ NÚÑEZ, PHD



GLOBAL ECONOMY

- ✓ interactive and interconnected

REGION

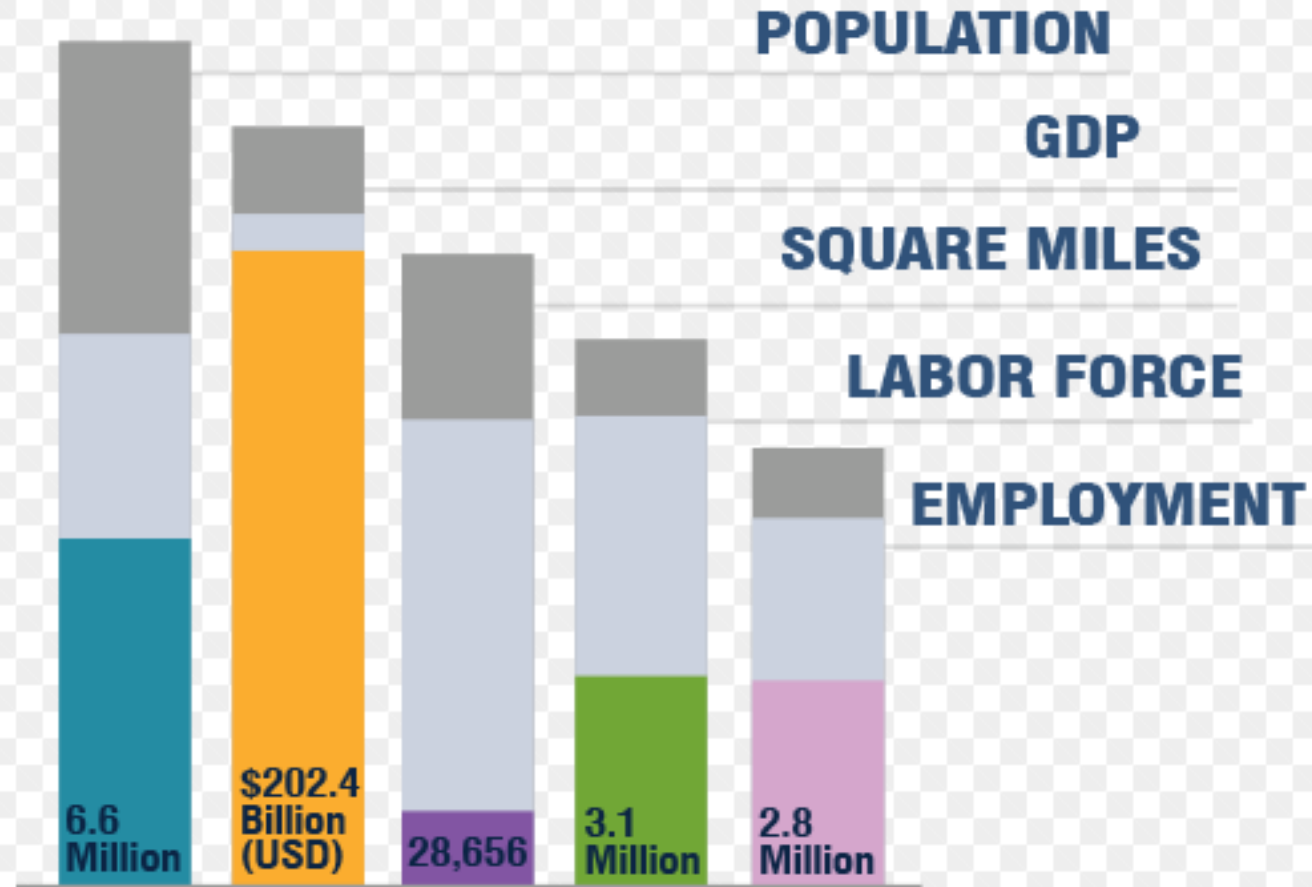
- ✓ geographical and business unit
- ✓ center of growth without borders

CALI-BAJA MEGA REGION



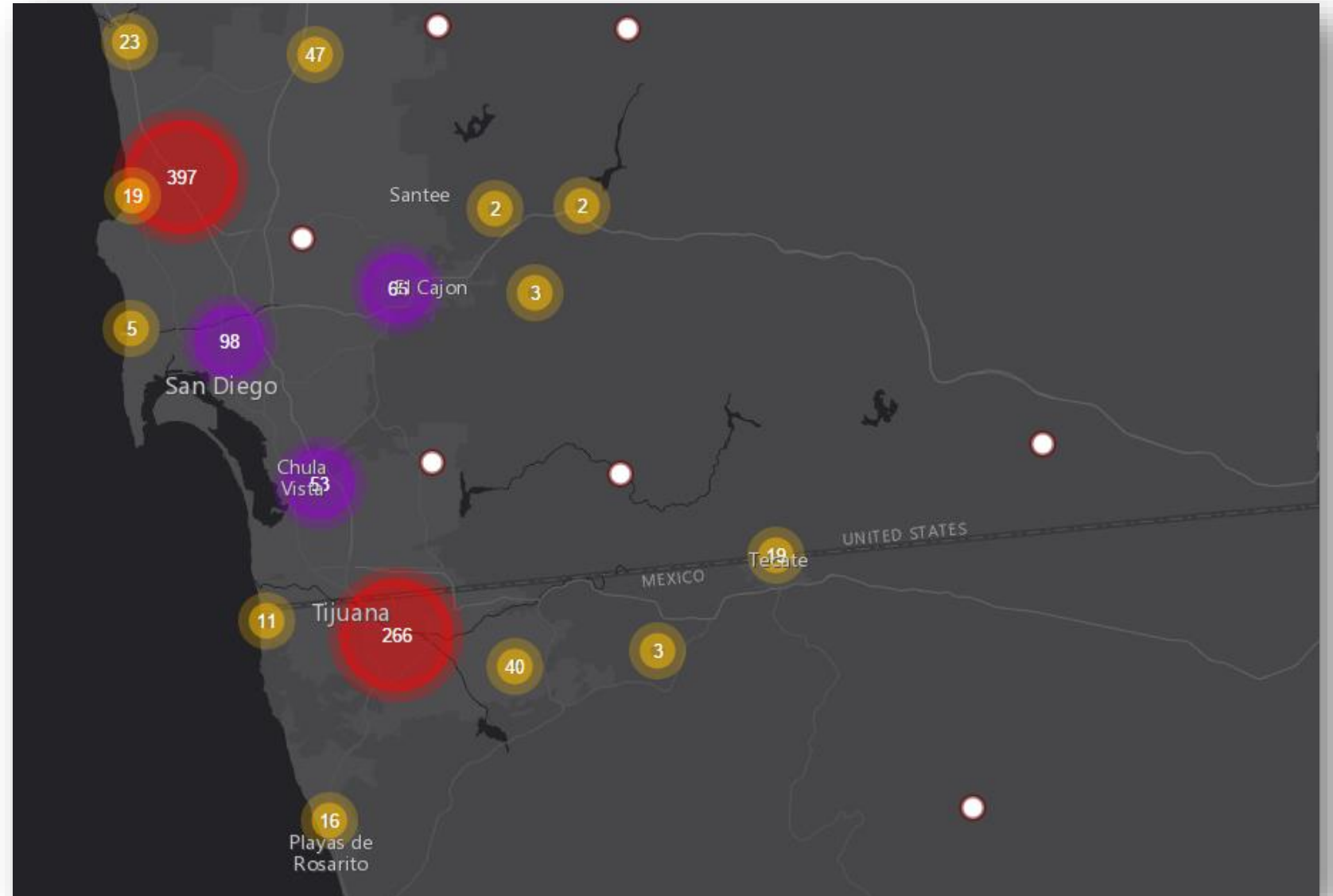
CALI-BAJA
MEGA
REGION =

The 6th largest GDP
topping **\$202** billion dollars.



Cali-Baja Strategic Industries

- ✓ Advanced Manufacturing
- ✓ Aerospace Manufacturing
- ✓ Electronic Equipment
- ✓ Clean Technology
- ✓ Logistics



Applied Biotech

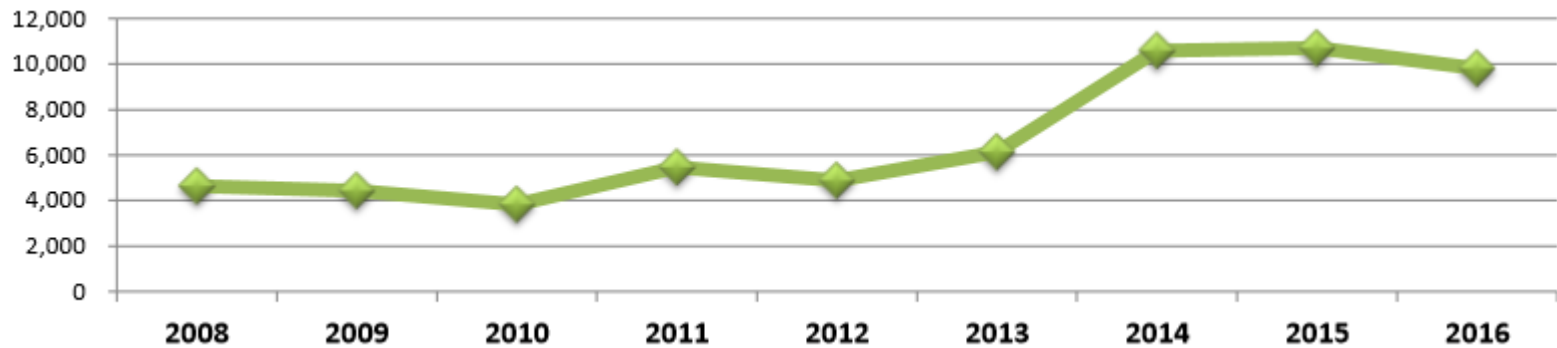
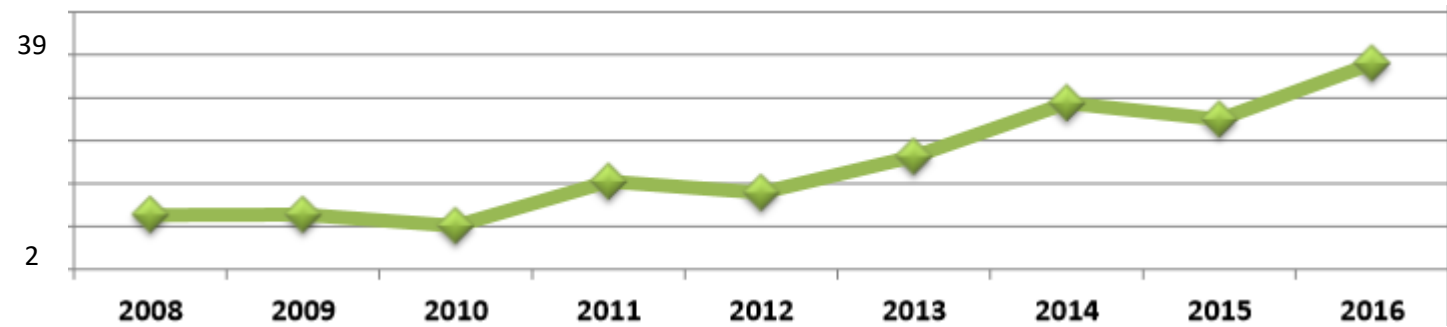
This endeavor objective is first to exhibit the binational ecosystem of innovation structure, and secondly, using the social network analysis to identify patterns of behavior and association within the network to understand the cooperation between actors in the context of the aquaculture sector.

BAJA CALIFORNIA

In the past 30 years the development of biotechnologies among regional research institutions have led to the emergence of a group of sixty-four aquaculture firms whose characteristics match up with the common profile that characterizes biotechnology companies worldwide.

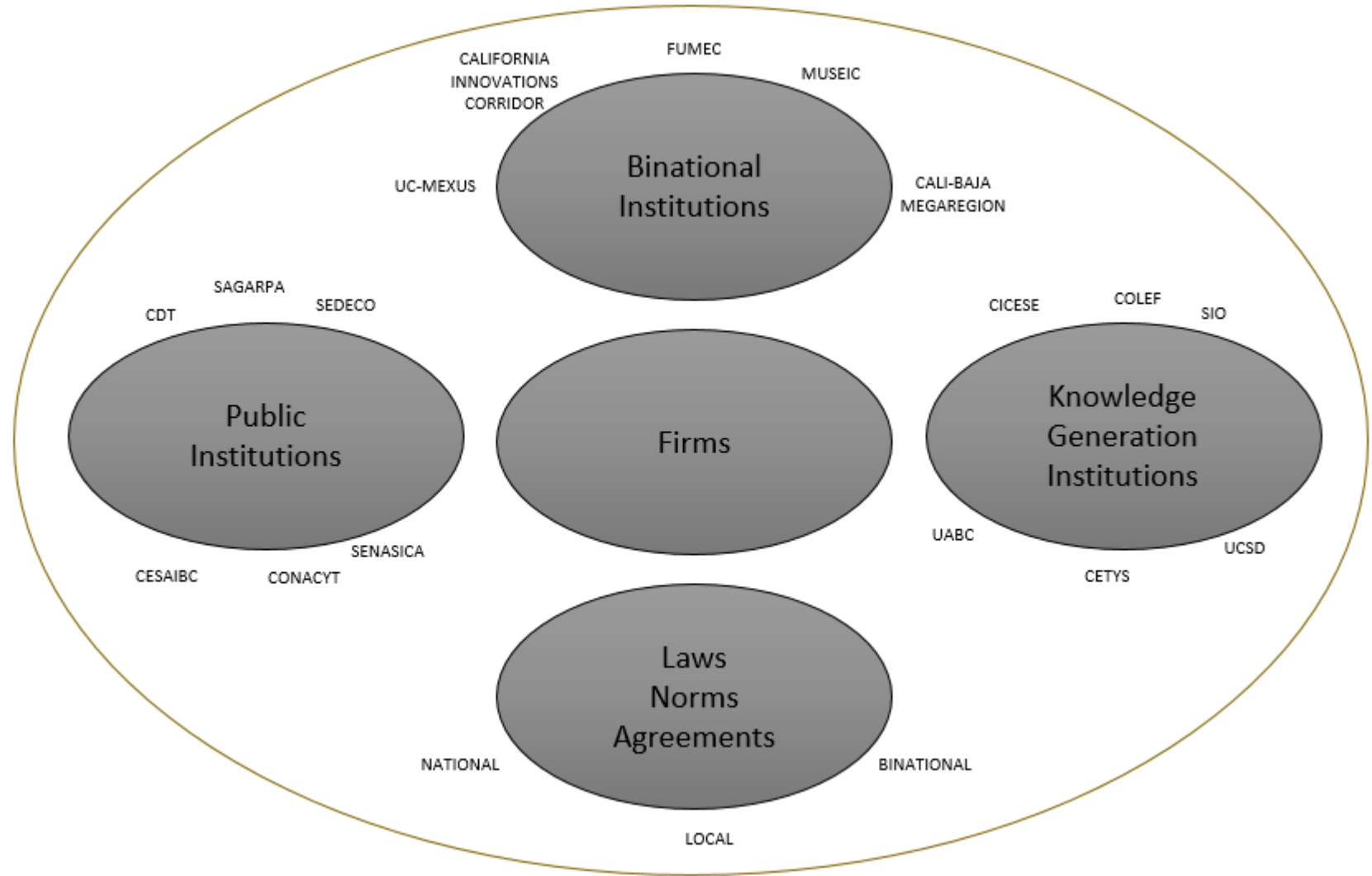
- ✓ Small or medium productive units
- ✓ With few employees, highly qualified
- ✓ Emerge in geographical areas with high research activity

Baja California
Aquaculture Economic
Value 2008-2016
(million dollars)



Baja California
Aquaculture Production
2008-2016 (tons)

STRUCTURE BINATIONAL ECOSYSTEM OF INNOVATION



An innovation system is a network of public and private institutions, whose interactions and activities initiate, import, modify or disseminate new technologies (Freeman, 1987)

Social Network Analysis is a tool that allows the understanding of interactions between actors and how these relations derive the circulation of information, resources, influences, among others, within the structure (Salancik, 1995).

Allows the quantification and visualization of the ties that form the system of relationships seen as a network in which actors are inserted and who seek to accomplish as many collective achievements as personal interest (Daly & Finnigan, 2009)

SOCIAL NETWORK ANALYSYS

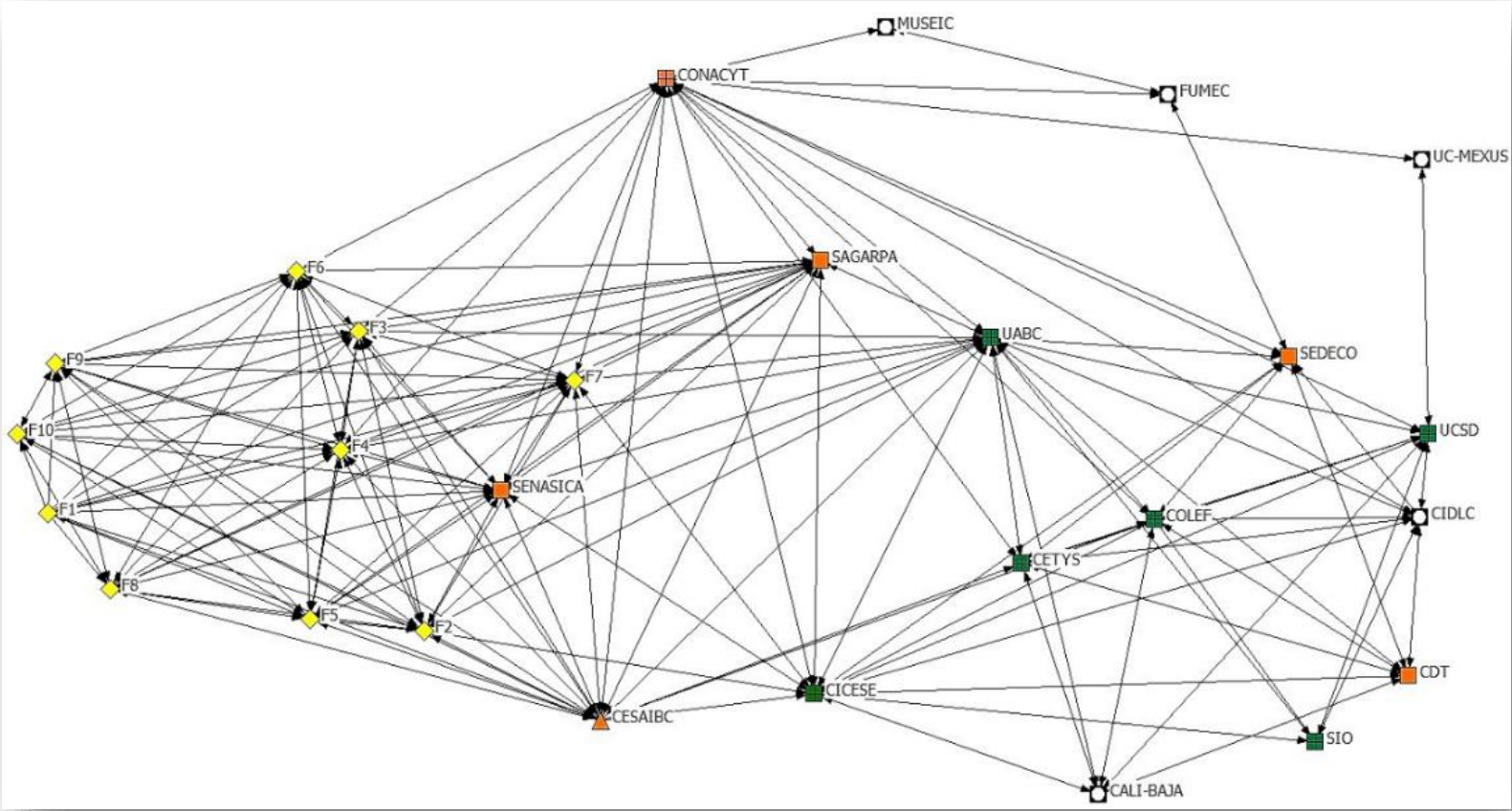
CENTRALITY	CLOSENESS	BETWEENESS
Defined as the capacity of an actor to reach to all other nodes in the network Represents popularity	Capacity of a node to reach out to all the network's actors Measures popularity	Focuses on the control of communication, and is interpreted as the possibility that has a node or actor to mediate communications between pairs of nodes

Binational Ecosystem of Innovation Network Actors

Type of Institution	Actors
Higher education or research center	UABC, CICESE, CETYS, COLEF, UCSD, SIO, CONACYT
Binational	CIDLC, MUSEIC, CALI-BAJA, UC-MEXUS, FUMEC
Baja California government	SAGARPA, SENASICA, SEDECO
Non-governmental organization	CESAIBC, CDT
Aquaculture firms	F1 Abulones Cultivados S De R L De C V F2 Acuícola Pacar Spr De RI. F3 Productos Oceánica F4 Ostricola Nautilus S De RI De CV F5 Acuamos Spr De RL F6 Ostiones Guerrero S.A. De C.V. F7 Baja Seas, S De RI De CV F8 Aqualap SA De CV F9 Vizsomar F10 Acuacultura Oceánica

Source: Author's data base

Binational Innovation Ecosystem Network

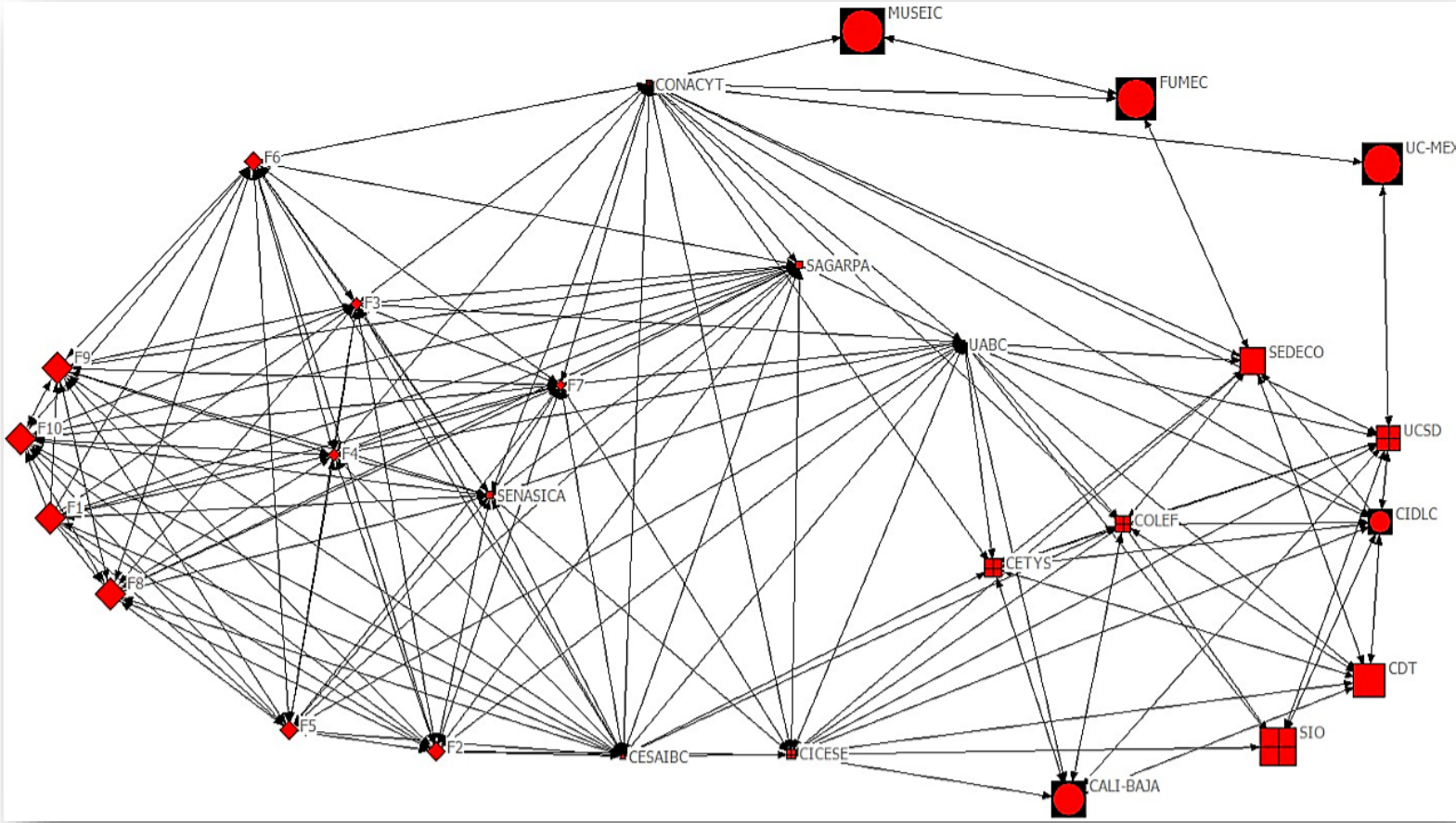


Source: Author's data base

Binational Innovation
System Network
Centrality Degree

UABC	18.000
CESAIBC	17.000
CONACYT	17.000
SAGARPA	15.000
F7	14.000
SENASICA	14.000
F3	13.000
F4	13.000
CICESE	13.000
F2	13.000
F6	12.000
F1	12.000
F5	12.000
F8	11.000
F10	11.000
F9	11.000
COLEF	9.000
UCSD	9.000
CIDLC	9.000
CETYS	8.000
CDT	7.000
SEDECO	7.000
CALI-BAJA	6.000
SIO	4.000
FUMEC	3.000
UC-MEXUS	2.000
MUSEIC	2.000

Binational Innovation
Ecosystem Network
Closeness



Binational Innovation
System Network
Betweenness

CONACYT	25.226
UABC	16.995
CICESE	8.162
CESAIBC	6.347
SAGARPA	3.803
SENASICA	3.792
F7	2.624
UCSD	2.357
F3	1.760
F4	1.760
SEDECO	1.628
F2	1.532
COLEF	1.356
F6	1.103
CETYS	0.959
CIDLC	0.819
F5	0.668
CDT	0.249
FUMEC	0.198
CALI-BAJA	0.157
F10	0.011
F8	0.011
F9	0.011
F1	0.011
SIO	0.000
UC-MEXUS	0.000
MUSEIC	0.000

Concluding remarks

According to these results, and overcoming political, economic and social asymmetries the Binational Ecosystem of Innovation Network has a great potential to catalyze cross-border competitiveness, and influence collaborative initiatives that value the physical proximity to institutions which is essential for an innovation ecosystem.

- ✓ Actors like FUMEC, UC-MEXUS and Cali-Baja among non-government like CDT and academic ones like UCSD and SIO are institutions that can positively influence, connect or reach out to all the nodes in the network.
- ✓ On the other hand, UABC, CESAIBC, SAGARPA, CICESE and CONACYT experience a high centrality degree, this means that they are near all other actors in the network, and they are accountable for connection dynamics between the productive sector specifically the aquaculture firms with the rest of the network's actors. These institutions are in an advantageous position that allows them to access resources from different sources and mediate with others and persuade them.
- ✓ It was possible to identify CONACYT as a bridge actor, in other words this is the institution that promotes and establishes communications between pairs of nodes
- ✓ It's been possible to distinguish that research and higher education institutions have more capacities to reach associative relationships.

Thank you.



