

Emergence and Persistence of a Watershed Governance Network

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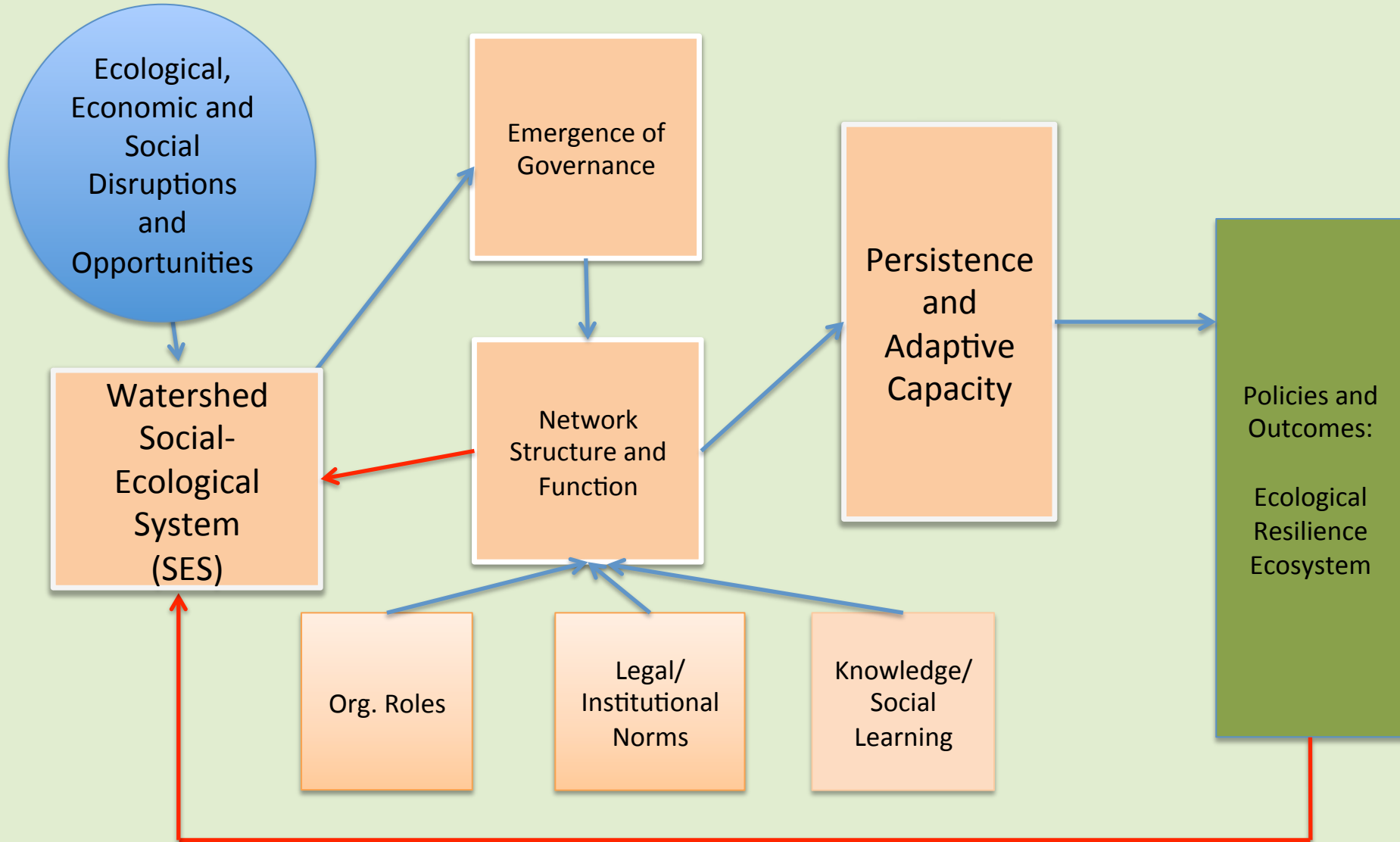


Research Questions

- What are the unique qualities of the **Social-Ecological System** of the Chagrin River valley and watershed?
- How did governance of the Chagrin River watershed **emerge** from this SES?
- How is this governance structured and how does it function?
- What are the qualities of governance in the Chagrin River watershed that has allowed this configuration to persist over time?



Framework



Social-Ecological System

- Multi-scale pattern of resource use around which humans have organized themselves (Resilience Alliance 2007)
- Humans and nature co-dependent and *co-evolving* (Ostrom 1990; du Plessis, 2008; Folke 2006)
- Sustainability: maintaining system resilience
 - (Berkes, Colding and Folke 200



Governance Networks

- Governance structure and function:
 - Formal and informal rules and norms (Hufty 2011; Pahl-Wost et al 2007)
 - Stakeholders set norms of interaction and motives (Cooper and Kathi 2005; Ozawa 1991; Wondolleck and Yaffee 2000; Thompson and Perry 2006; Innes and Booher 2010)
 - Shared meanings and knowledge as basis for joint action (Wenger 1998;)
 - Networks of inter-personal and inter-organizational relationships that channel resource flows



Emergence of Governance

- Self organizing
 - SES is a complex system
 - Things get organized in response to SES
- Complex patterns from simple rules
 - Micro-level interactions among people and organizations create structure (institutions, norms of behavior)
 - This structure creates constraints/opportunities for individual/organizational interaction
 - People change the structure over time



Persistence defined

- Emergent macro patterns persist *despite continual turnover in their constituents*
- Drivers?
 - Legal framework/mandates
 - Organizational positioning/influence
 - Success in mobilizing resources
 - Adaptive capacity of network
 - Leadership
 - Learning capacity of network

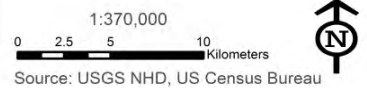
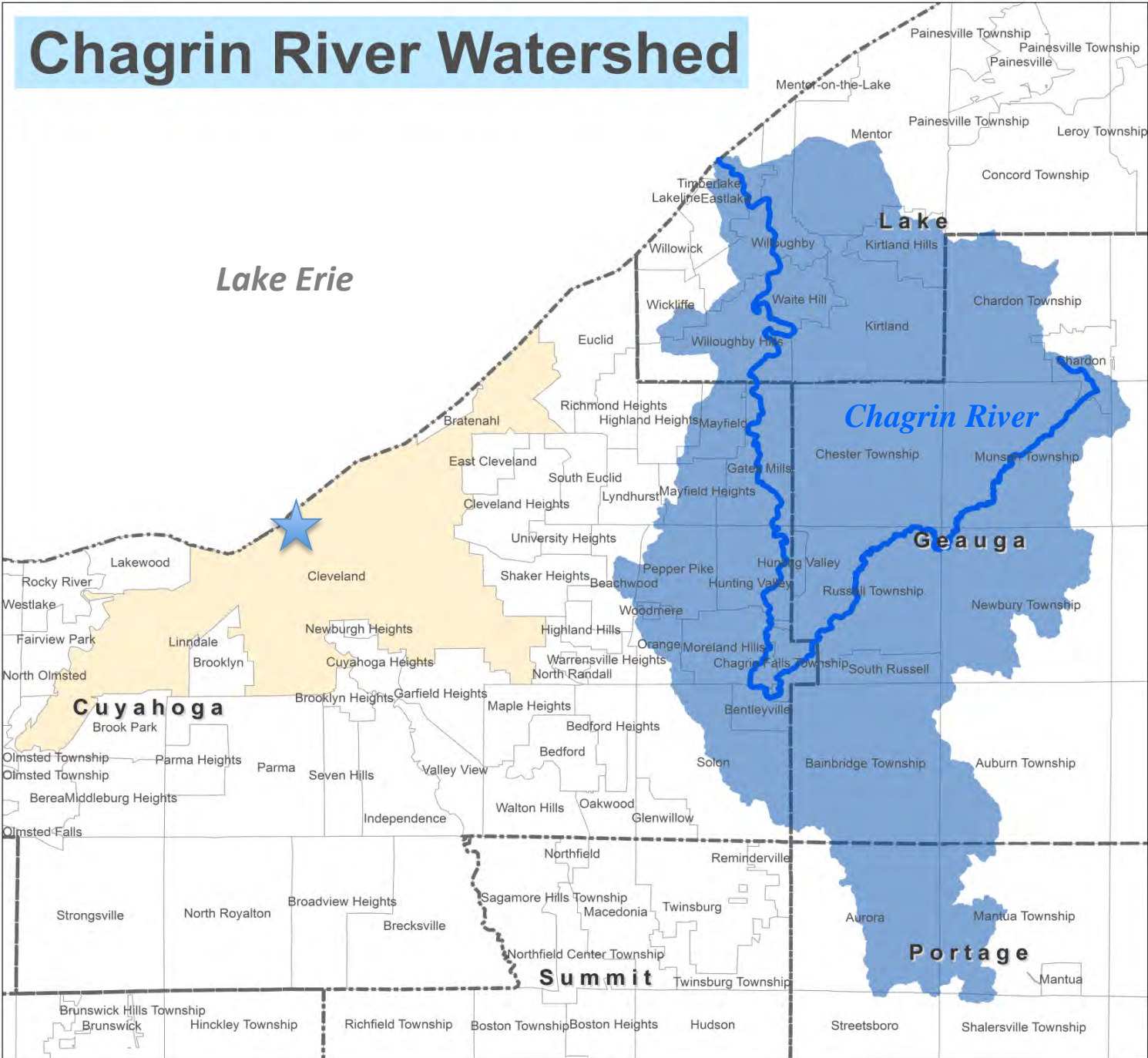


Data Collection

- Review Historical documents
- 20 stakeholder interviews to date across type of organization, geographic range
 - Semi-structured, recorded, transcribed
 - Reviewed by three researchers for themes and data
- Web pages, linked in, interviews to map network relationships
 - Analyze with UCINET software



Chagrin River Watershed



Results: SES

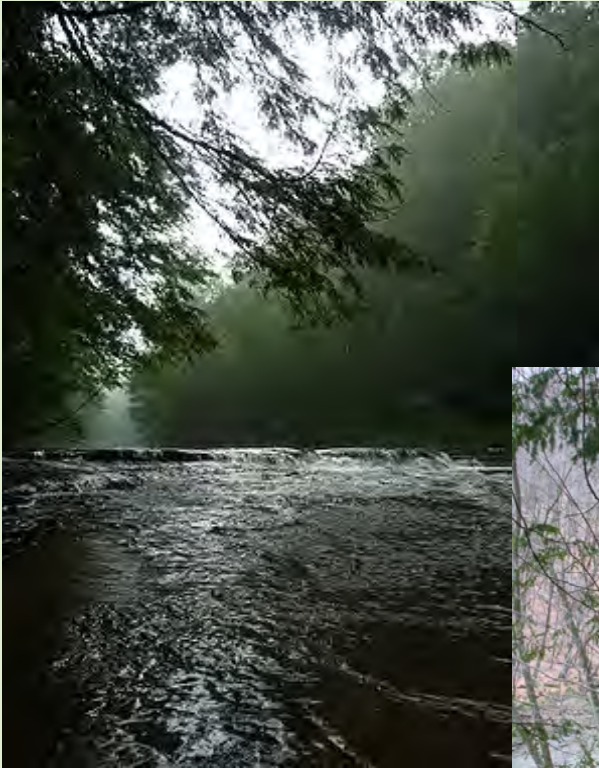
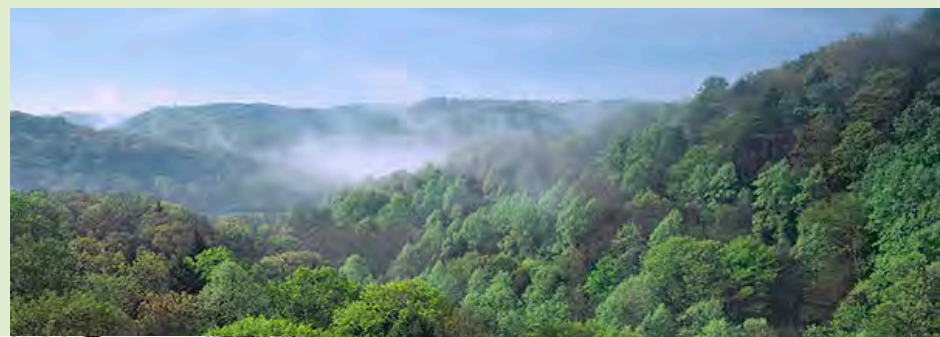
- SES: **AT THE EDGE!**
 - local urbanization and farming landscapes
 - **impervious cover threshold**
 - still something worth preserving
- Fragmented geography & fragmented cultures tied to landscape and history
- Fragmented government authority
- Strong agreement among stakeholders on conditions and trends



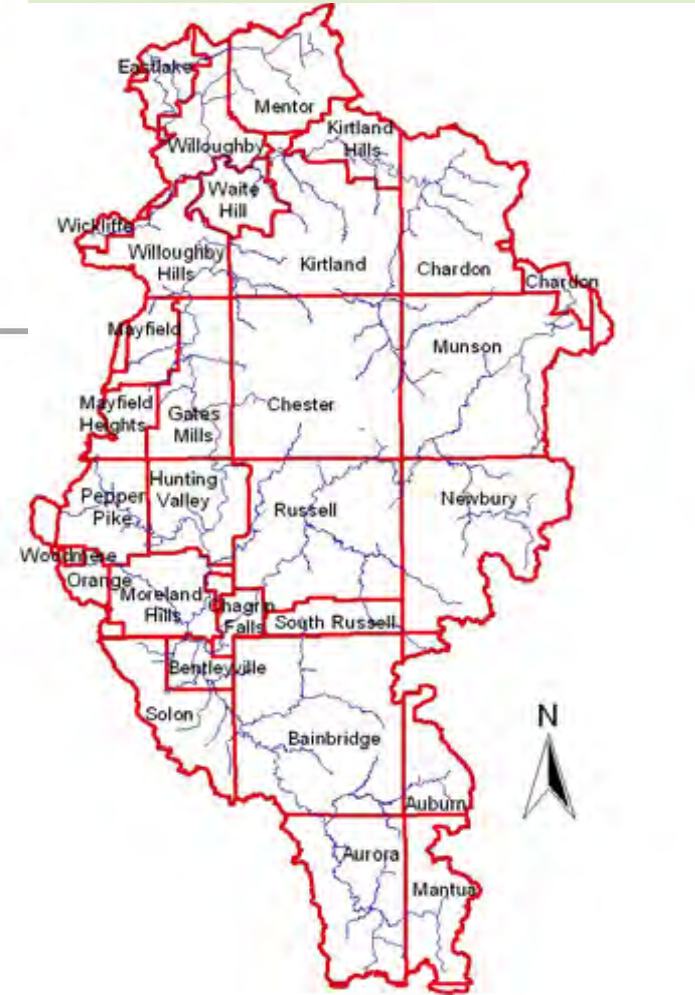
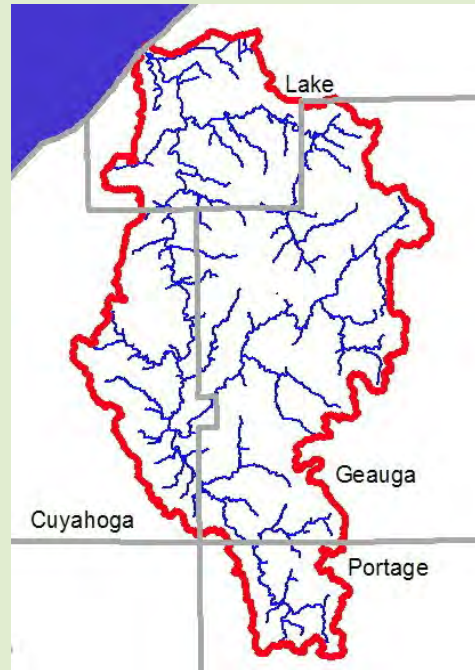
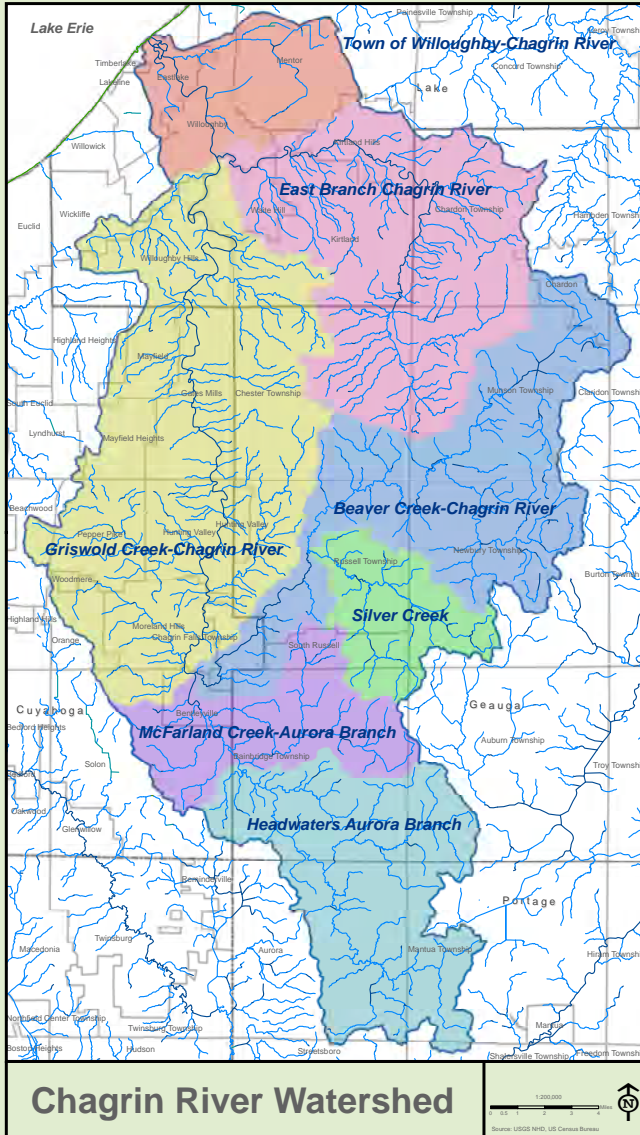


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Google earth



Maxine Goodman Levin College of U



Results: Emergence of Current Governance

- NETWORK FACTORS: convergence of stakeholder interests, trends and disruptions
 - *Large land holders*
 - *Headwater land trusts*
 - *Downstream flooding communities*
- UNIQUE to SES: **Chagrin River Watershed Partners**
- EXTERNAL FACTORS
 - Phase II regulations and funding opportunities





Chagrin River Watershed Partners

- Member organization of municipalities and townships in watershed; local government dues
- Formed in 1996; all but two local govt. are members
- Sponsoring members: private and nonprofit organizations (engineer, planning, ecological services)
- Membership dues hire small staff to assist local governments in storm water management efforts
 - Project management, grant writing, model regulations, technical assistance, networking, facilitation of processes, land owner outreach, research on stormwater and stream restoration
- <http://www.crwp.org>



Governance Structure

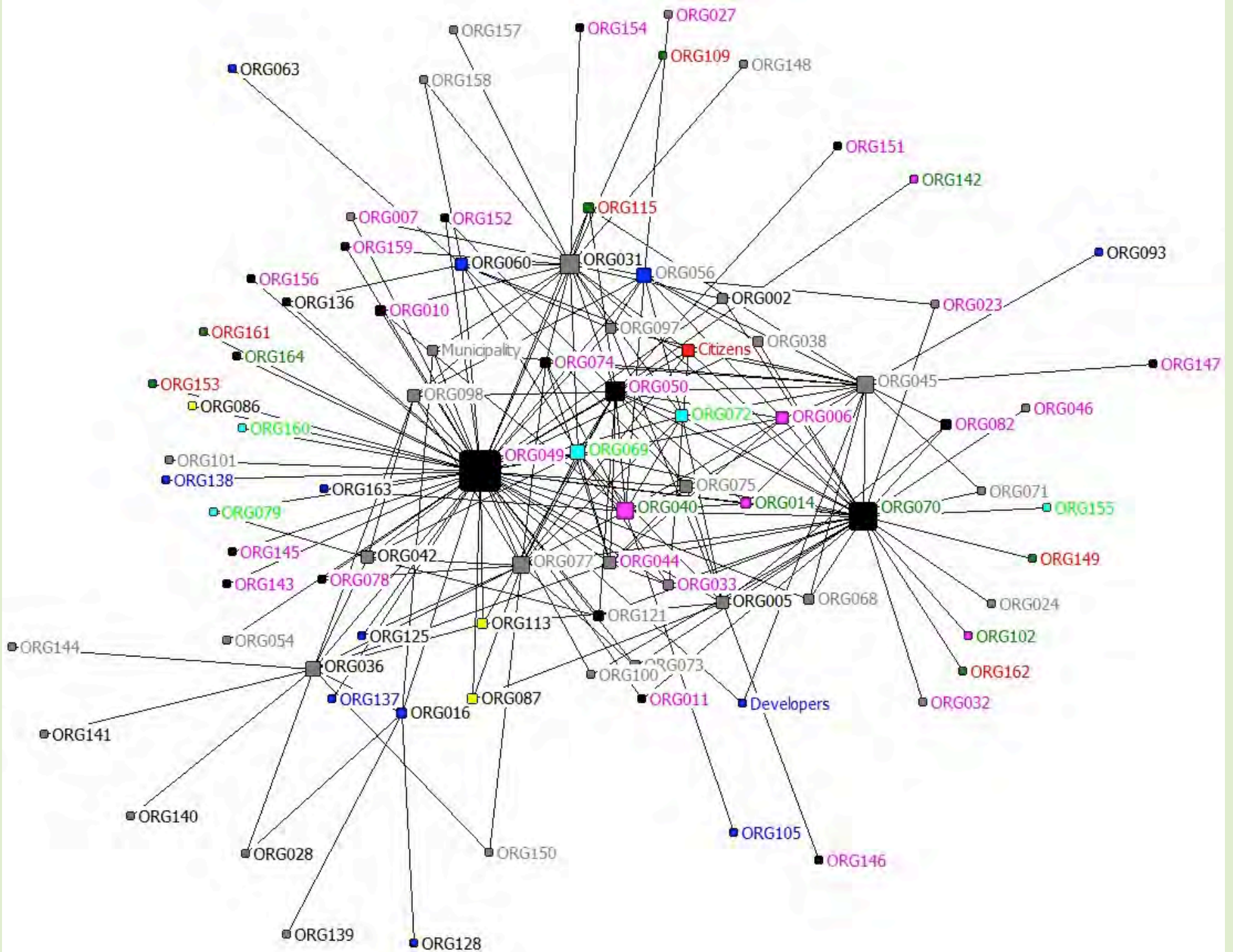
- What did our interviews tell us?
 - Strong role of CRWP **STAFF** in leading activities, bridging function, mobilizing resources (money and expertise); watershed perspective
 - Not one watershed network
 - Rather differentiated by geography (e.g., upstream/downstream), by county boundary (county, Metroparks & SWCD)
 - Differentiated by communities of practice
 - Except when these come together for specific projects



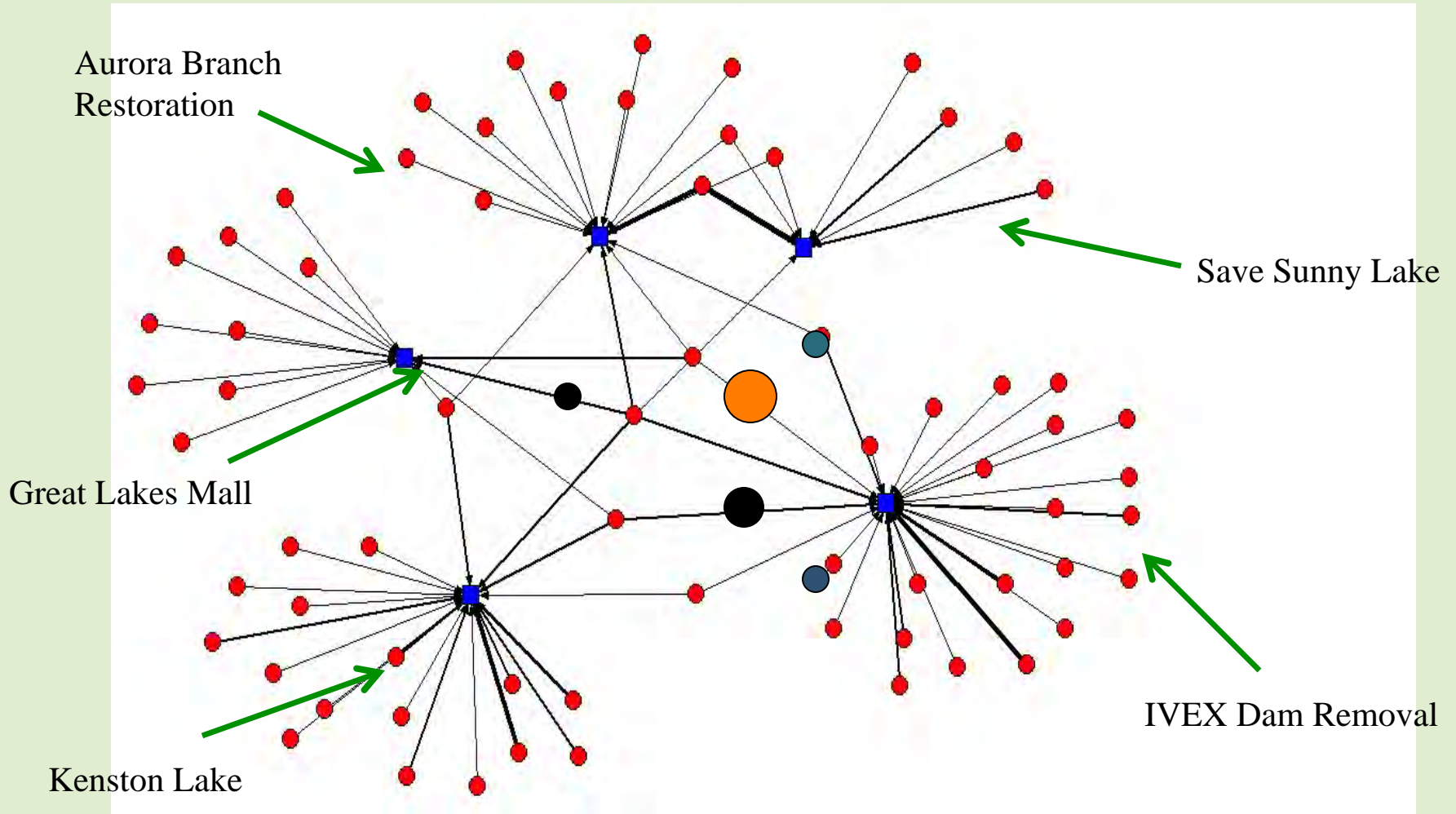
Governance Function

- Little mention of federal and state agencies for bridging function, but serve as source of scientific information and \$, and therefore have influence
- Network operates informally, through personal connections, with limited formal opportunities for knowledge exchange or sharing
- Various types and levels of interaction: cooperation, coordination and collaboration (how does this shape structure?)





Network Analysis of Five Projects



Persistence

- Legal mandates
 - Continuing influence of CWA Phase II
- Mobilizing resources
 - \$20M over 15 years into CRV
 - CRWP responsible for most of this
 - Highly-connected network of scientific and technical expertise



Persistence: Adaptive Capacity

- Adaptive Capacity
 - of *people* and *institutions* to manage human actions so to enhance ecological system sustainability and resilience
 - *Network of organizations* capable of accumulating the experiences and collective memory needed to cope with surprise and turbulence (Pahl-Wostl et al 2007) through *distributed cognition* (Agyris and Schon 1996)



Adaptive Capacity: Leadership

- CRWP: four executive directors over 15 years
 - New director hired this summer; first one who wasn't involved at the beginning or didn't serve as a staff or assistant director at CRWP
 - In each case prior, the leader was just what they organization needed to adapt to trends
- How? Strong and continued presence of board members who began the organization has provided continuity, avoided mission drift



Adaptive Capacity: Diversity

- *Engagement* of a diversity of stakeholders, geographies, interests (**significant evidence**)
- *Diversity of expertise* of staff at CRWP and in network
 - Multiple communities of practice



Adaptive Capacity: Norms and Rules

- Norms of behavior
 - *Shared* rules and norms for interaction among diverse organizations that *flex to address changing conditions and opportunities* (significant evidence)
- Local government relationships changed through creation of CRWP
 - Beginning to see interaction among local governments on other types of shared projects, based on interaction on storm water management projects
 - All local government members adopted riparian setback ordinances to protect Chagrin from land development negatives
- *Trust (interpersonal)* for instrumental knowledge and shared interests is very high



Adaptive Capacity: Networked Learning

- Based on social learning
 - Building and sharing instrumental (scientific and technical) and relational (*management* and personal interactions) (Pahl-Wostl et al 2007)
- Key knowledge (as perceived by participants)
 - *Scientific and technical information* from park districts, state agencies and county engineers
 - *Social learning*: shared knowledge base, joint generation of new knowledge, innovation, cross-disciplinary (**some evidence in projects**)
 - Appreciation of **local culture** when working in different parts of the watershed (**key**)
 - **Tacit, experiential knowledge** to organize and fund large restoration/ stormwater projects (CRWP)



Challenges to Adaptive Capacity

- No clear vision of how to incorporate uncertainty into shared planning and decision making
 - But all respondents expected they could adapt to changing conditions based on their trust of expertise and good working relationships
- Still no overall shared understanding of ecological risks or watershed-level perspective among local governments or citizens according to respondents

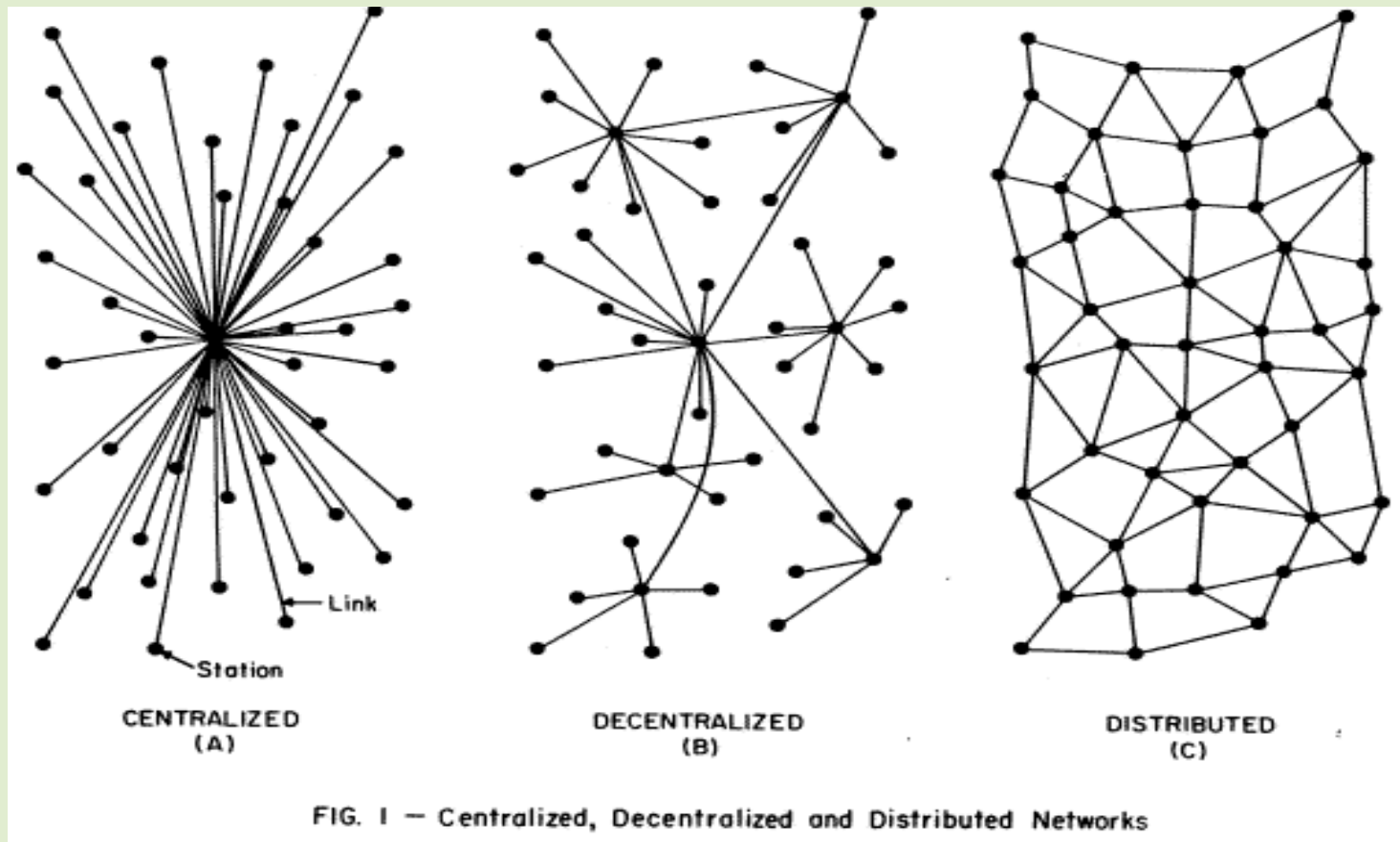


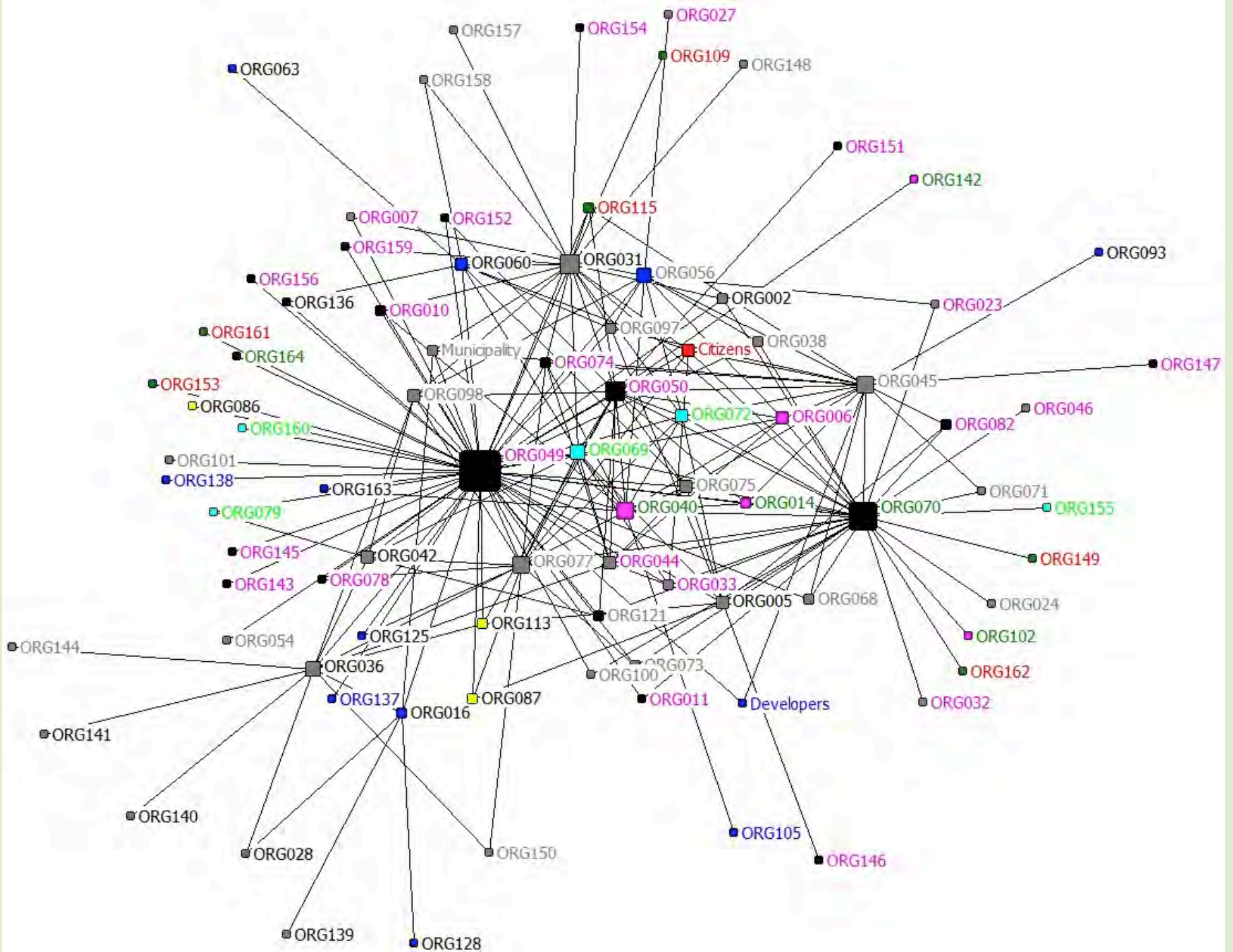
Challenges to Adaptive Capacity

- Knowledge “situated” geographically and in **sub-networks**
 - New knowledge gains not broadly shared across the entire watershed
 - Formal knowledge-sharing uncommon
 - Retirement of agency professionals
- **Over-reliance** on a few key organizations or key people can reduce **flexibility** of governance structure and function
 - Network position of CRWP and flexibility?



Three Types of Networks and Resilience?





Conclusions: Enhanced Governance

- Unique role of CWRP as **membership organization** of **local governments** places land use authority at core of collaboration and coordination in watershed; this is GOOD!
- Strengthen **sharing** of instrumental and tacit relational knowledge over a wider geography and into organizations
 - Continue to foster watershed perspective among local governments and other stakeholders; Chagrin Summit?
 - Debrief **project** successes and failures to professionals and local decision makers (CRWP): *what can be learned?*
 - **State agencies**: work with CRWP to ensure transfer of **social knowledge** about working in the Chagrin River to new state agency personnel; locally-generated projects are key to success



Publications/Future Research

- Publications:
 - Book chapter
 - Journal article: Emergence and Persistence
 - Journal article: Structure theory (bridge literatures)
 - Journal article: Structure application
 - Journal article: Social learning through projects
- Continued Research
 - Environmental history of the Chagrin River
 - Compare governance in Chagrin with other watersheds in Ohio



Thank You!

- Amy Brennan, Ex. Director, Chagrin River Watershed Partners
- Our interview respondents
- Cleveland State University Research Office
 - CSU Faculty Scholarship Initiative Grant provided summer funding for masters student Kristel Smith and doctoral student Aritree Samantha
- Dept. of Urban Studies
 - GA positions for these two students

