

# Climate Change Adaptation Planning within The Chippewas of Georgina Island First Nation

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Indigenous and Northern Affairs Canada  
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This presentation delivered by:

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# Our Partners

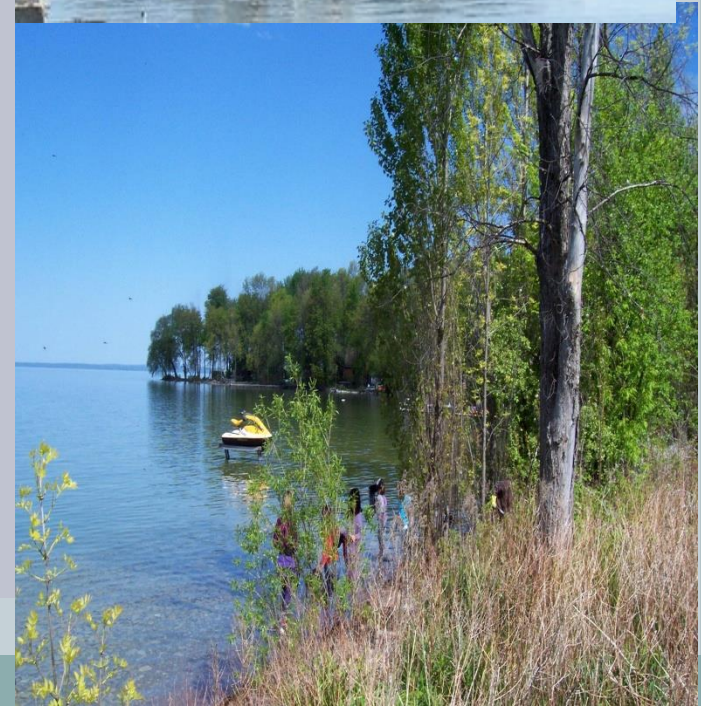
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- Indigenous and Northern Affairs Canada
- OCCIAR
- CEC
- US EPA
- MOECC
- Georgian College
- MNRF
- Turtle Island Conservation
- Lake Simcoe Region Conservation Authority



# The Chippewas of Georgina Island First Nation At A Glimpse

- Located approximately 100 km north of the Greater Toronto Area (GTA).
- Consisting of 3 separate Islands, Georgina, Snake and Fox with 2 mainland access points, Virginia Beach and Island Grove.
- Georgina is the largest of the Islands with a land mass of approximately 15 km<sup>2</sup> which is 4.5 km long and 3.2 km wide, an area of 1,416 ha/4,399 acres.
- Infrastructure consists of an Administration building, Health Centre, Police Station, Fire Hall, Landfill site, Sewage lagoon, Water Treatment Facility, Community Centre, Church, Trails System, an Outdoor Rink, Childcare facility for infants and toddlers and a two-classroom school that accommodates the children of the First Nation until Grade 5.
- There are a few Member operated businesses on the First Nation which include but are not limited to Bed and Breakfasts, Cabin and Cottage Rentals, Restaurants and a Campground.
- The second largest Island is Snake covering an area of approximately 135ha/333acres and has 227 cottages. Fox Island is the smallest at 20ha/49acres with 52 cottages. Neither Snake Island or Fox Island have year round member residents or major Infrastructure.
- The forest on Georgina Island is one of the largest remaining in the GTA, covering 70% of the island. It includes 39 species of mixed wood, hardwood and conifer supporting over 400 species of flora, including several locally, regionally and provincially rare species, and approximately 180 species of birds. Rabbits, beaver, racoon, grouse, wood frogs, salamanders, foxes, wolf, wild turkey and deer also make their home in the forest and in the four adjacent wetlands.



# Background and Link to Climate Change

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- Georgina Island First Nation is progressive on environmental issues and often leaders in the implementation of such with the premise that all of the work that is being undertaken is all linked in one way or another.
  - Species at Risk Mapping
  - Ash Tree Monitoring and Management
  - Invasive Species Management
  - Shoreline and wetland restoration/rehabilitation
  - Climate Change Adaptation
- Since Initiation of the Climate Change Project in 2011 with funding through INAC the First Nation has been incorporating the Climate Change Lens to all of our Projects.



# Framework

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- Step 1: Let's get started
- Step 2: Gather data
- Step 3: Current vulnerability
- Step 4: Prioritize future risk
- Step 5: Identify adaptation options
- Step 6: Implement adaptation actions
- *Step 7: Monitor progress*



# Community Engagement Critical

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Community Engagement was a critical component of this project and continues to be.



Information sessions (with bingo) and interactive workshops were hosted within the community to:

- Inform the community of the project
- Encourage participation
- Ensure feedback

# Building the Georgina Island Team

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## Community Adaptation Liaison

- to foster relationships with the Georgina Island First Nation community



## Advisory Committee

- a group of ten consisting of community members including youth, adults and elders.

## Tasks of Advisory Committee:

- Helped customize Traditional Ecological Knowledge survey specifically towards Climate Impacts/Changes within Georgina Island
- Also suggested a list of potential interviewees

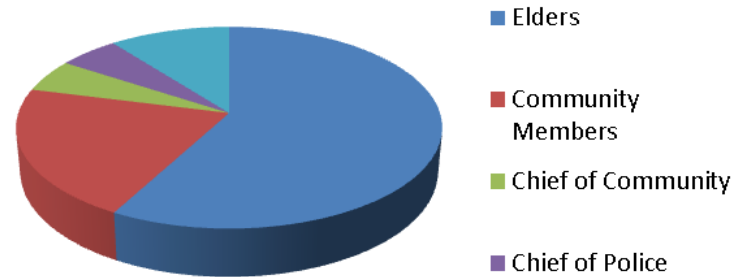
# TEK Gathering

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Inspired by Dr. Dave Pearson's Survey "Adaptation Planning in the Far North" modified to reflect Georgina Island living:

- Changes in the "bush"
- Changes in wet areas
- Changes in fish
- Changes in birds, animals and insects
- Weather changes in the different seasons, Changes in air/clouds
- Changes in Winter Weather
- Effects of Climate Change on Community Infrastructure
- Weather Emergencies and Health

## Interviews



**Weather changes in the different seasons, Changes in air/clouds:** early spring, long hot summers

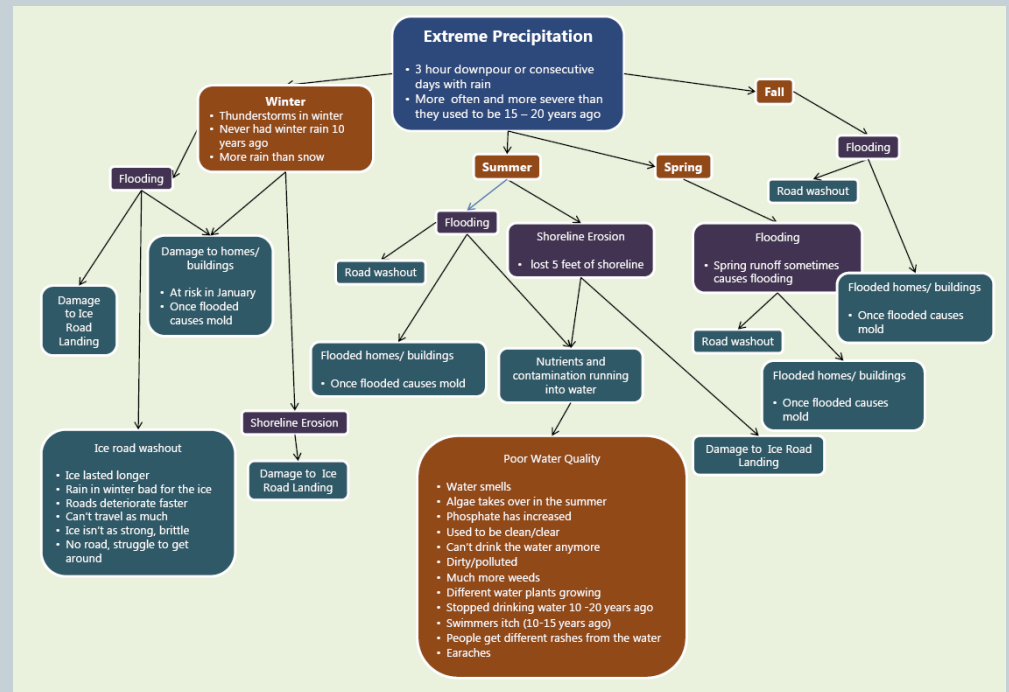
**Changes in Winter Weather:** winters are warmer, ice quality, less snow



# Current Vulnerabilities

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Impact trees help visualize how changes in weather and climate impacted the community



# Prioritized Impacts

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Climate Hazard	Impacted Areas	Impact (taken directly from TEK survey responses)
<b>Changes in Winter</b>	Transportation	Road deteriorates faster
		Can't travel as much
		No road, struggle to get around
		Ice pile-up
		Damage to ice road landings
		Pressure cracks
		Using the Scoots more
		Stress on ferry due to breaking through the ice



# Historical and Projected Climate

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## Historical climate for Shanty Bay

### *Historical Temperature*

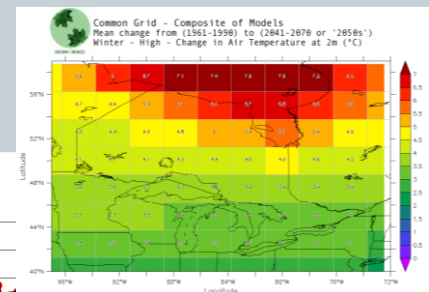
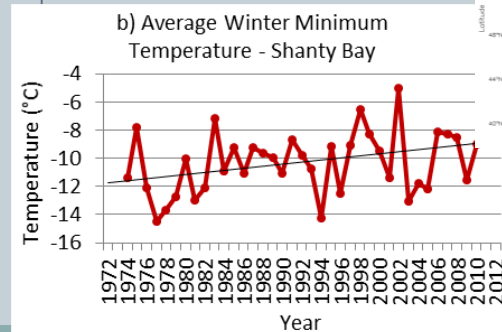
- Warming observed in all seasons
- More warming observed in winter than other seasons
- Winter minimum temperature warmed more than maximum temperature

### *Historical Precipitation*

- Increases in precipitation observed in all seasons
- Environment Canada's Canadian Climate Change Senarios Network Ensemble Projections

## Future projections

- Mean temperature projected to increase into the 2050s for all seasons
- Greatest warming projected to occur in the winter
- Projected change in precipitation is variable



# Risk Assessment

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Risk is defined by the likelihood and consequences of impacts associated with climate change on vulnerable systems



# Risk Assessment

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**Climate Event:** Changes in winter (warmer, shorter, more rain, less snow)

**Risk Scenario:** Transportation - damage to ice road landings

**Time Horizon (planning period):** 2050s

Consequence	Social			Economic			Environmental				Cultural		
	Health & Safety	Displacement	Loss of Livelihood	Property Damage	Financial Impact	Impact on Community Finances	Air	Water	Land	Ecosystem	Traditional Food	Traditional Medicine	Traditional Lifestyle
Very Low (1)							✓	✓		✓	✓	✓	
Low (2)									✓				
Moderate (3)	✓					✓							
High (4)			✓	✓	✓								
Very High (5)		✓											

Consequence = Moderate (3)  
Likelihood = Virtually certain to occur (5)



# Risk Matrix

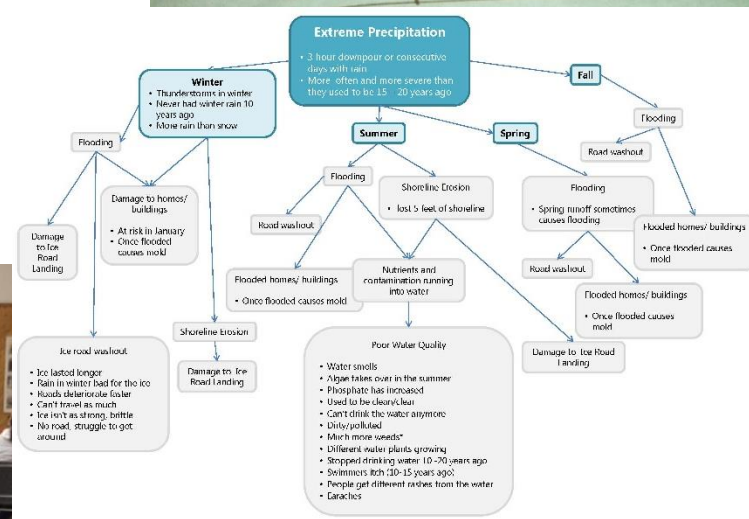
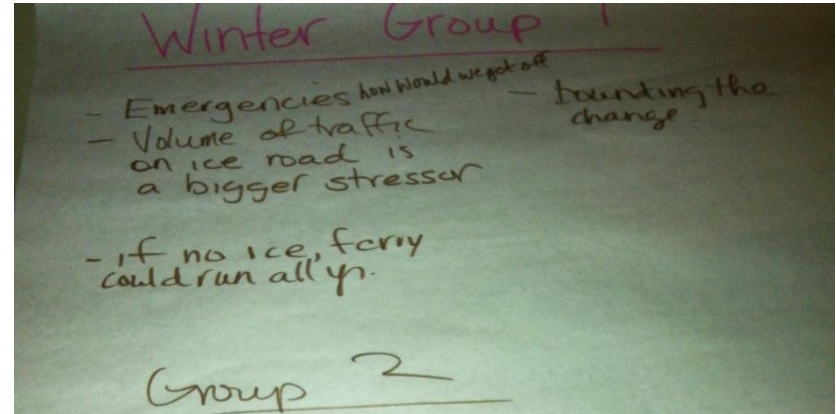
Consequence	Very High					
	High					
	Moderate				Transportation: • Pressure cracks • Stress on ferry due to break through ice	Transportation: • Road deteriorating faster • Damage to ice road landings
	Low				Ice Quality: • Freeze-up getting later and breaking up earlier	
	Very Low					
		Very Unlikely to happen	Occasional Occurrence	Moderately Frequent	Occurs Often	Virtually Uncertain to Occur
		Likelihood				

	Very high risk: immediate controls required
	High risk: high priority control measure required
	Moderate risk: some controls required to reduce risk to lower levels
	Low risk: controls not likely
	Very low risk: does not require further consideration

# Interactive Workshop

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- Changes in Winter
- Changes in Summer
- Extreme Precipitation
- Wind
- Drought



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# Prioritized Risks

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- Ended up with a table of prioritized risks which was a combination of the results of the project team estimating risk, the advisory committee comments, and the community estimating consequence.
- Highest priority risks (very high and high) were moved into Year Three of the project.



Level of Risk	Climate Hazard	Impacted Area	Impact
Very high risk	Changes in Winter	Transportation	Road deteriorating faster (can't travel as much, no road, struggle to get around, using scoots more)
			Damage to ice road landings
	Changes in Summer	Impacts to Water Quality	Pressure cracks
Stress on ferry due to breaking through ice			
Health issues			
High Risk	Changes in Winter	Ice Quality	Water smells; used to be clean and clear; dirty/polluted
			Thinning
	Changes in Summer	Impacts to Water Quality	Algae taking over in summer
Drinking water (stopped drinking water 10-20 years ago; can't drink water anymore)			
Moderate Risk	Wind	Transportation	Much more weeds
			Stress on ferry due to breaking through the ice
	Extreme Precipitation	Poor Water Quality	Water smells; used to be clean and clear; dirty/polluted
		Flooding	Spring runoff sometimes causes flooding
	Drought	Wildfire	Road washouts
Changes in creeks		Wildfire	
Low Risk	Changes in Winter	Ice Quality	Wildfire
			Loss of community members through the ice
	Changes in Summer	Changes in swamps	Freeze-up getting later and breaking up earlier
			Swamps not draining properly
	Extreme Precipitation	Poor Water Quality	Swamps draining faster
			Wildfire
Drought	Changes in creeks	Pressure cracks	
		More weeds	
Very Low	Changes in Summer	Poor Water Quality	Different water plants growing
			Changes in Winter
Very Low	Changes in Summer	Poor Water Quality	Homes / buildings (in cold)
			Drought



# Recommended Adaptation Measures

	Risk	Adaptation Action
	<p><b>Very High Risk</b></p>	<p>The following adaptation measures address the highest priority risks. The “very high risks” were associated with 3 of the 5 climate hazards:</p> <ul style="list-style-type: none"> <li>• <b>Changes in Summer</b></li> <li>• <b>Extreme Rainfall</b></li> <li>• <b>Changes in Winter</b></li> </ul>
	<p><b>Risk Scenario:</b>  <b>Changes in winter – Transportation – Damage to ice road landings</b></p>	<p>Damage to ice road landings ranked as a “very high risk” due the changes in winter temperatures. In addition, damage to ice road landings ranked as a “moderate risk” due to wind. The following adaptations measures could be implemented to reduce the risks associated with ice road landings.</p> <p><b>Action:</b> Amend or update Transportation Manual to ensure scheduled and documented monitoring and maintenance of ice road landings is occurring, and how it may need to be adjusted to correspond to milder winters</p> <p><b>Action:</b> Develop a communication plan to notify community, on a regular basis, of ice conditions</p>

# Adaptation Plan

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GEORGINA ISLAND  
FIRST NATION  
CLIMATE CHANGE  
ADAPTATION PLAN



Adaptation  
recommendations to  
respond to risks  
associated with current  
and future climate  
change

# Policy Review

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## BARRIERS AND DRIVERS

**Barrier** refers to elements of policies or plans that hinder, or act as a barrier to, climate change adaptation actions.

**Driver** refers to elements of policies or plans that support, or 'drive', climate change adaptation action.

**Emergency Plan**  
**Health and Safety Manual/Policy**  
**Forest Management Plan**  
**Pandemic Influenza Contingency Plan**  
**Transportation Manual**  
**Operations and Maintenance Manual**

## POICY REVIEW

Policies and plans were reviewed to determine whether they enable or provide a barrier to effective adaptation

GEORGINA ISLAND  
FIRST NATION BAND  
POLICIES

# EMERGENCY MANAGEMENT PLAN

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## General recommendations:

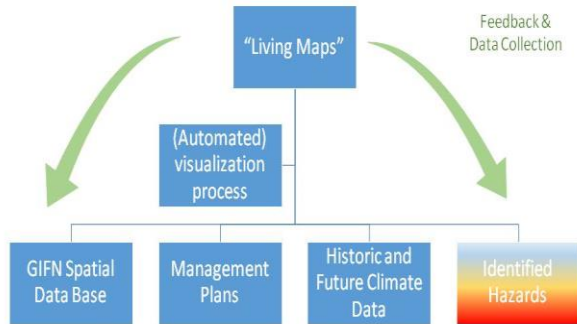
- An emergency plan should be proactive, as much as possible when dealing with the impacts of climate change
- Update the plan to include a list of what would constitute an emergency (e.g. extreme or severe weather, flooding, drought, blow-down, wildfire, etc; all of which may become more frequent or intense with climate change).
- Update the plan to specify that adaptive measures such as debris clearing and removal from culverts and ditches should also be conducted before extreme weather is expected.
- In addition to providing information on rising flood waters, plan should be amended to include monitoring ice conditions, ice road (including landings), and ice jams/pile-up
- Encourage households to have a '72 hour' emergency preparedness kit

<b>Title</b>	<b>Emergency Plan</b>
<b>Date</b>	01/01/2005
<b>Purpose</b>	To lay down a plan of action for the most efficient employment of all services required in order that the following may be assured: a) The earliest possible response to an emergency... (see page 1 of plan)
<b>Who does it apply to?</b>	Band Administration, Health Centre, Fire Department, Emergency Response Volunteers and GI Police
<b>Policy type</b>	Plan
<b>Location (URL)</b>	<u>Emergency Plan sits with the Georgina Island First Nation</u>
<b>Associated Policies</b>	Influenza Pandemic Plan, Health and Safety Plan, Transportation Manual
<b>Author Organization</b>	Chippewas of Georgina Island First Nation

# Hazard Mapping

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- Translating identified Climate Impacts into GIS Maps
- (Geographic Information System)



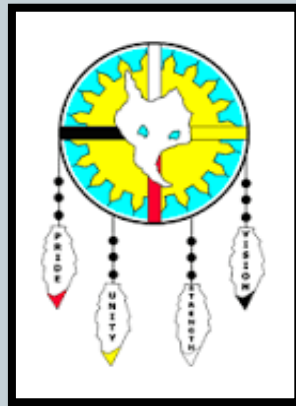
# WORKING TOGETHER AND SHARING KNOWLEDGE

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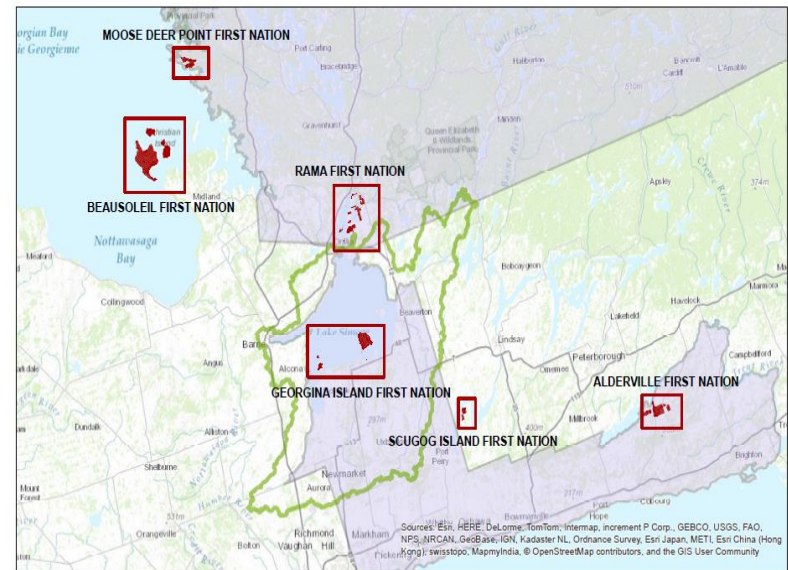
## Participating Communities



**Moose Deer Point  
First Nation**



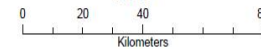
**Beausoleil First Nation**



**Legend**

- First Nations
- Lake Simcoe Watershed
- Williams Treaty Area

**First Nation Extent  
2015**



For illustration purposes only.  
Watershed information from MWPS.  
First Nation information from NRCAN.  
June 23, 2015.



GEORGINA ISLAND

## Williams Treaty Territory

# CHALLENGES

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Funding  
Funding  
Funding



"The sensitivity of the natural environment to changes in weather and climate affect the ecosystems and socioeconomic aspects of every community, especially Indigenous communities"

# Chi Miigwetch!

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