



Technology and Forest Governance in the Peruvian Amazon

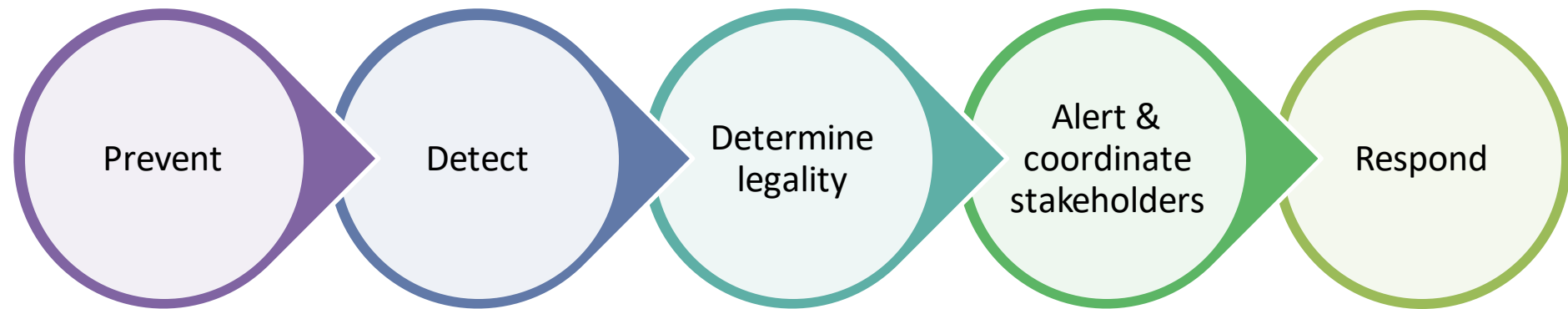
Forest Legality Week
October 24, 2018

Forest crimes in Peruvian Amazon



- Well known problem, many challenges for effective response
- Rapid advances in satellite technology:
 - Resolution
 - Frequency
 - Availability
- Creating accessible and actionable information
- Building capacity and coordination among diverse stakeholders
- Remote region with limited funds, technical capacity & enforcement

Amazon Conservation's Approach



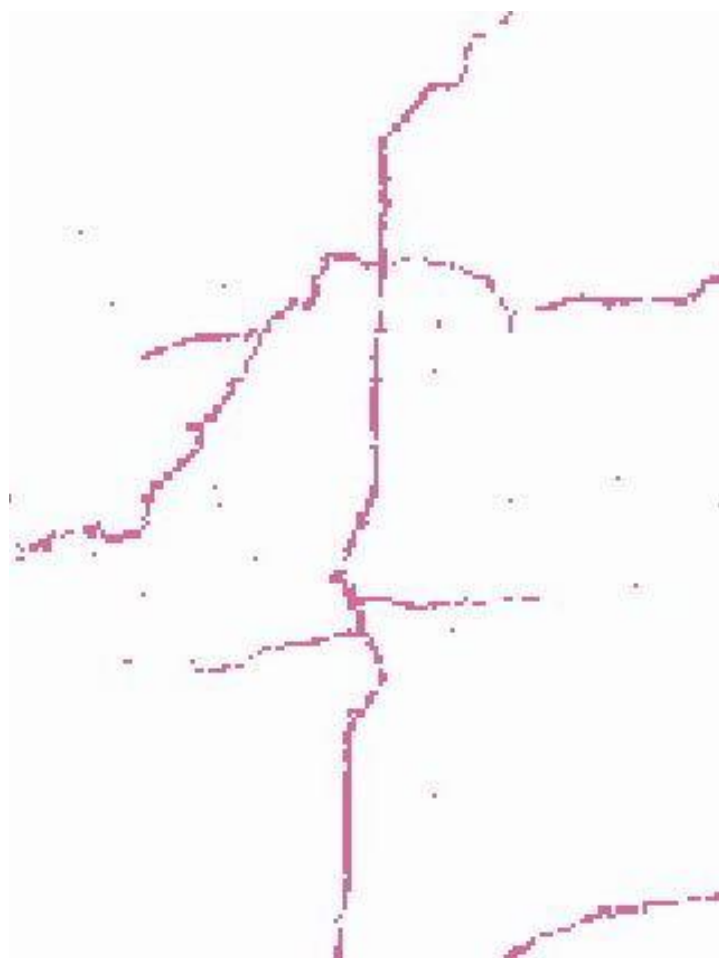
- Implementing strategy at multiple spatial scales
- Key stakeholders: forest users, government and civil society

Initial detection: logging roads

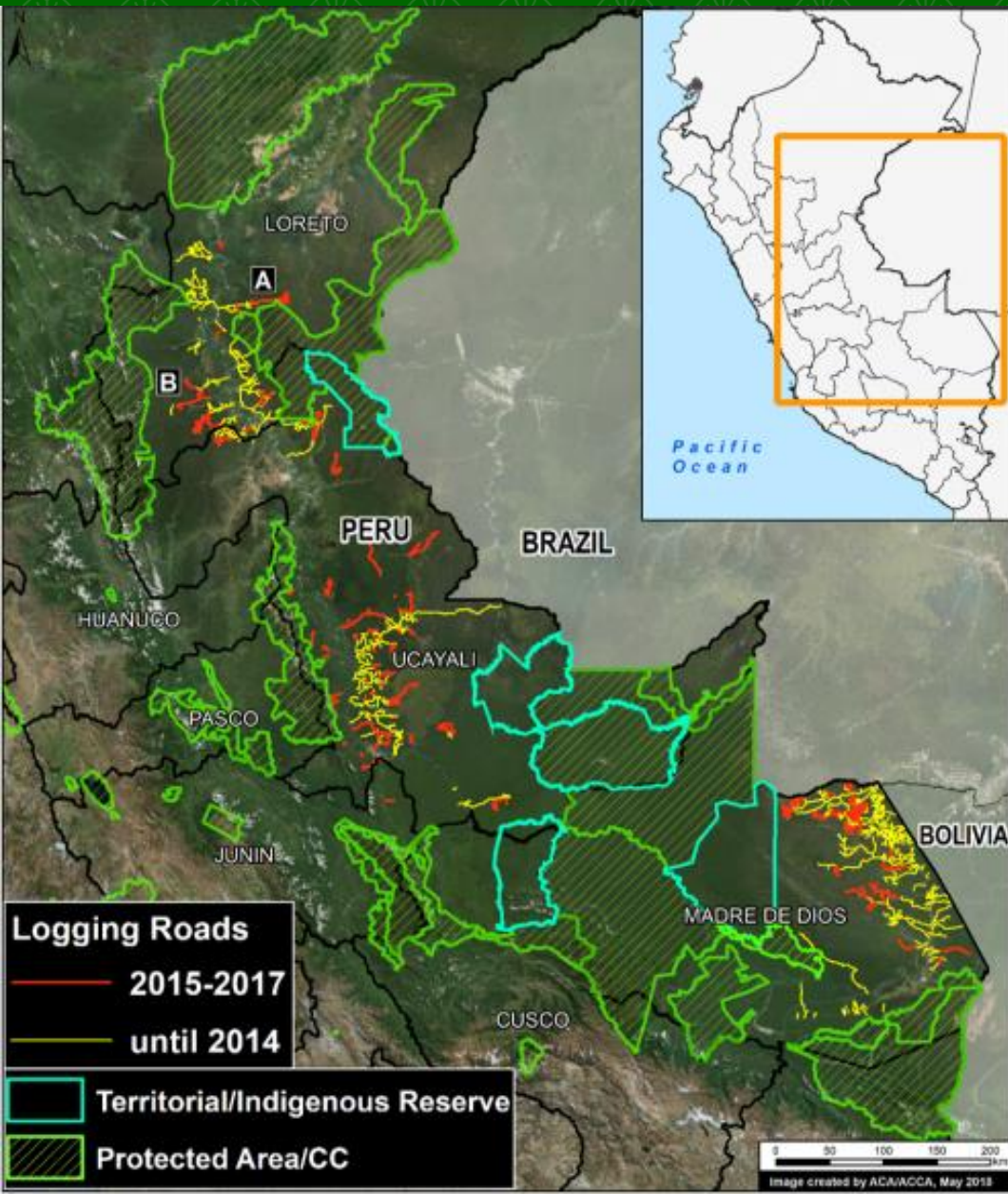
GLAD alerts quickly detect new logging roads

Follow-up with:

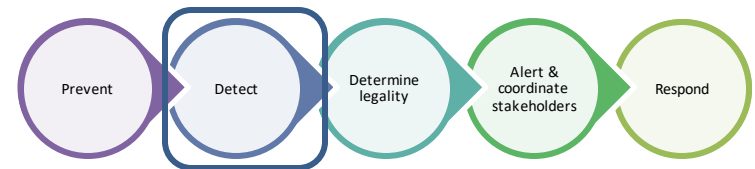
- **Near real time monitoring with satellite imagery**
- **Analysis of legality**



Detection: Amazon-wide scale



- **Base Map** of all logging roads in Peruvian Amazon since 2001
- **1,365 miles** (2,200 km) of logging roads constructed over last three years (2015-17). Roads are in **red**
- New generation of satellites allow us to monitor in near real-time:
 - Medium resolution: Sentinel-1 (radar)
 - High resolution: Planet microsats



Regional Ex: tracking logging roads around Sierra del Divisor National Park

**Using Radar to track
a Logging Road
near Sierra del Divisor**

May 2015 - December 2017

**Radar allows
near real-time
monitoring in
all weather
conditions**

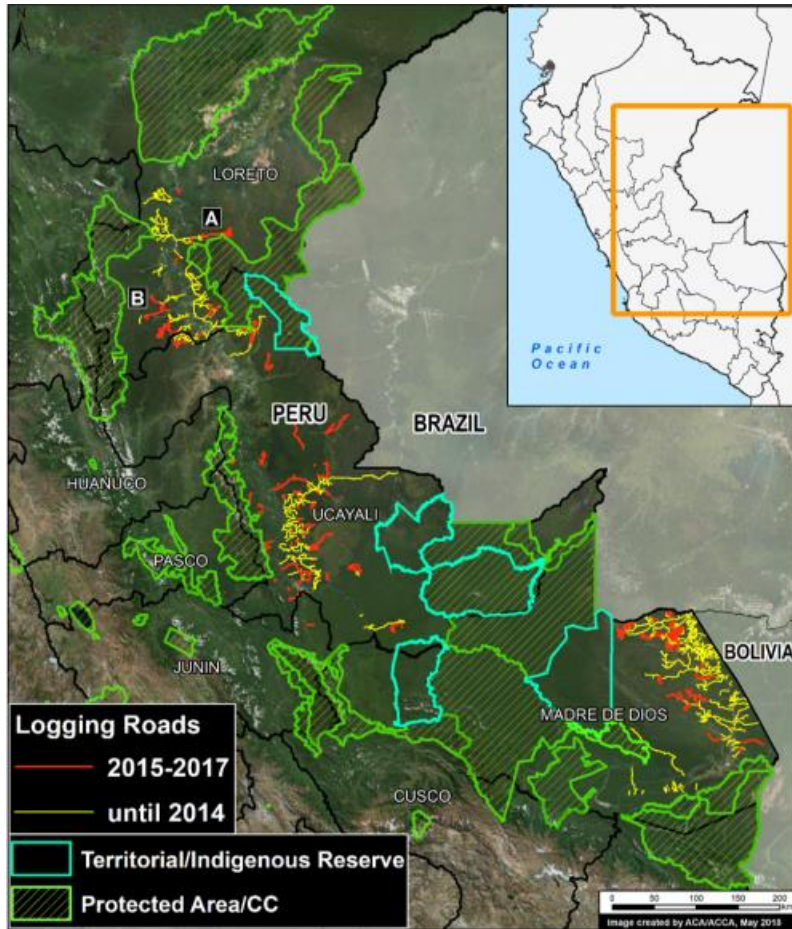
Tracking logging roads around Sierra del Divisor National Park



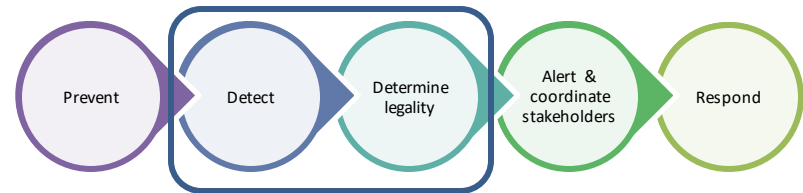
**Same road in
Planet imagery**

**Daily imagery from
Planet now allows
real-time tracking**

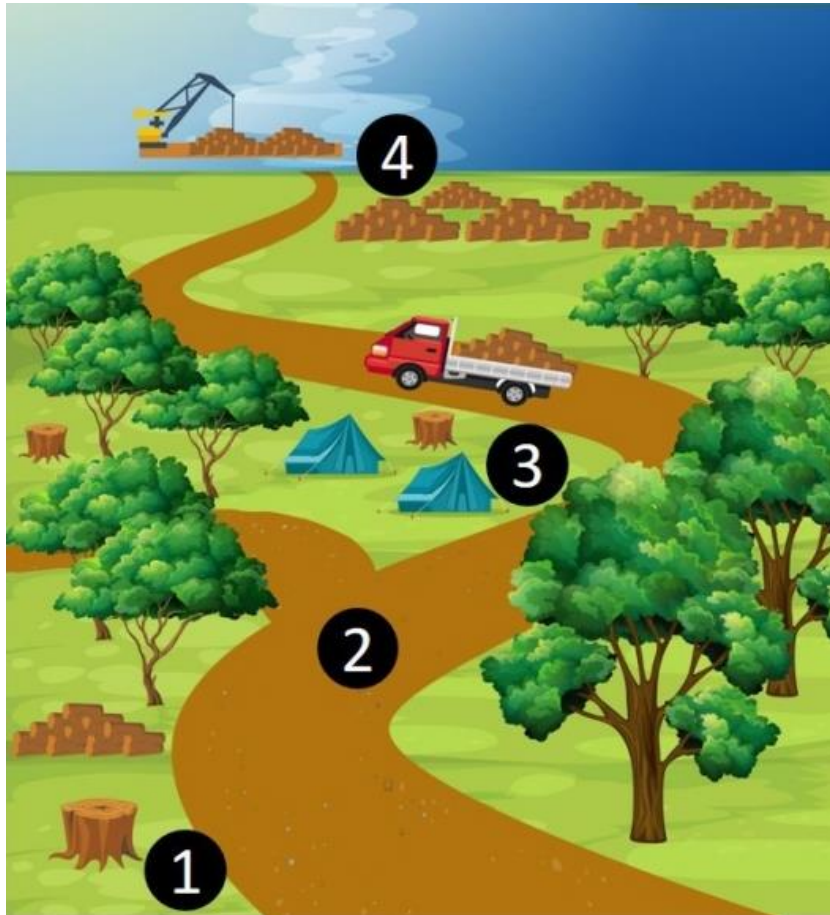
Next steps: improving detection & identify illegal activity



- Acquisition of detailed and up-to-date information on logging concessions, permits and authorizations to verify legality of roads
- Zooming in with VERY HIGH-RESOLUTION satellites (DigitalGlobe, SkySat, PeruSat-1)



Logging operation activities

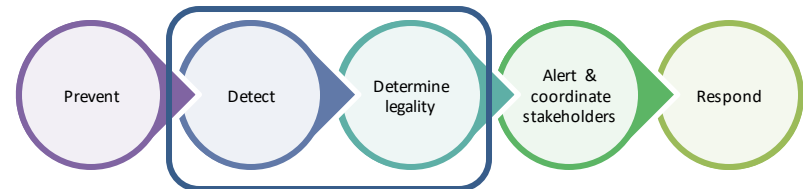


1. Selective logging of high-value trees

2. Construction of **logging roads** (access roads)

3. Logging **camps**

4. Storage and transport



1. Selective logging



1. Selective logging of high-value trees

This is an example of potential legal logging in authorized area

1. Selective logging



1. Selective logging of high-value trees

This is an example of potential legal logging in authorized area

2. Construction of roads



2. Construction of logging roads

This is an example of potential legal logging road in authorized area

2. Construction of roads



2. Construction of logging roads

This is an example of confirmed **illegal logging path** in unauthorized area

3. Logging camps



3. Logging camps

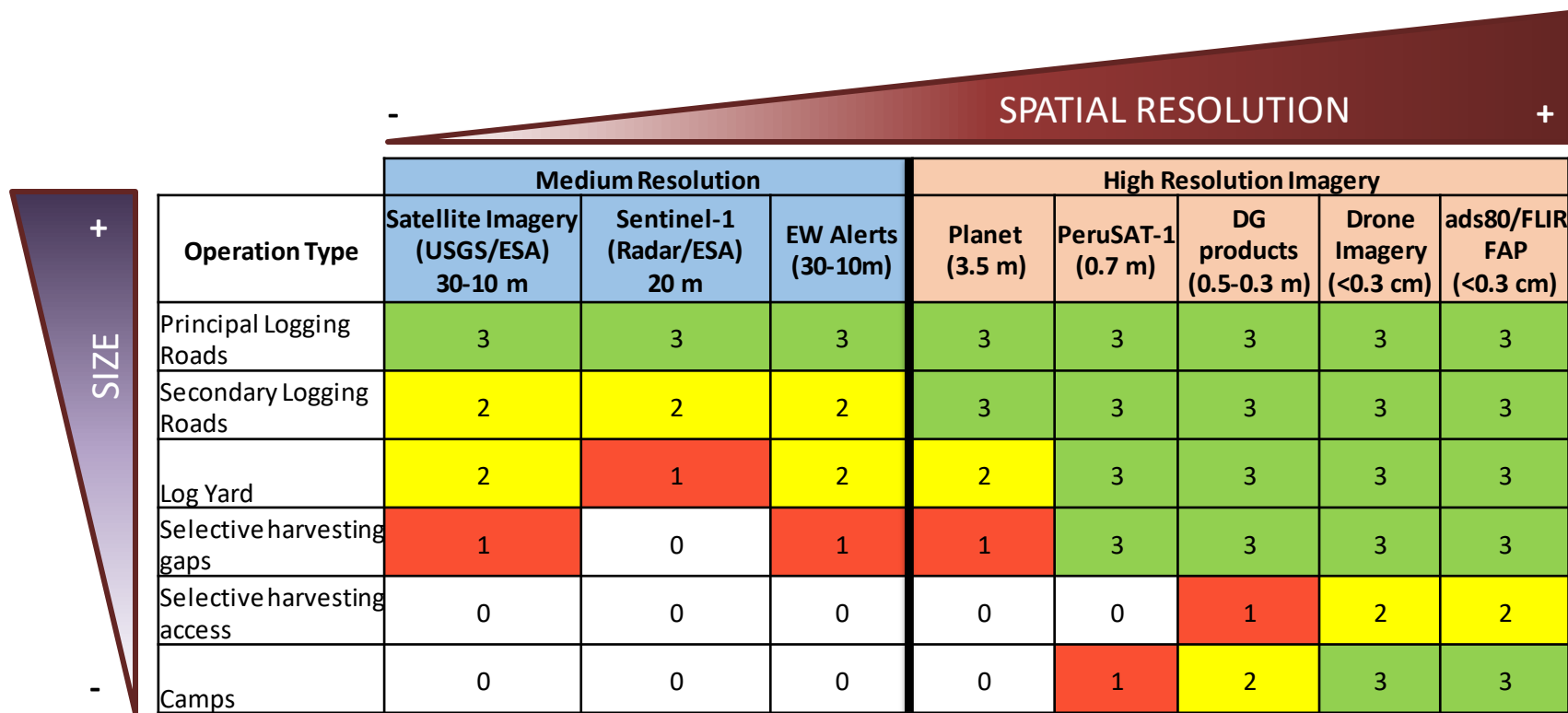
This is an example of potential legal logging camp in authorized area

3. Logging camps



3. Logging camps

This is example of confirmed **illegal logging camp** in unauthorized area



3 = Good

2 = Medium

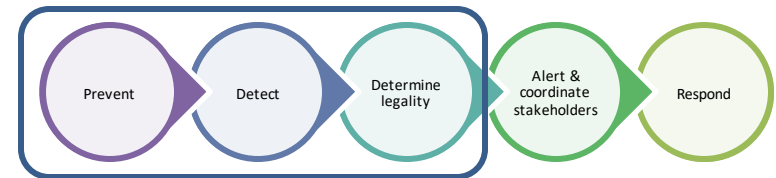
1 = Poor

0 = No detection

Local scale: Madre de Dios, Peru



- Working with ~90 forestry concessionaires
- Concessions 30% of Madre de Dios, 2.5 million hectares
- Multi-faceted training, field support & ongoing legal advising

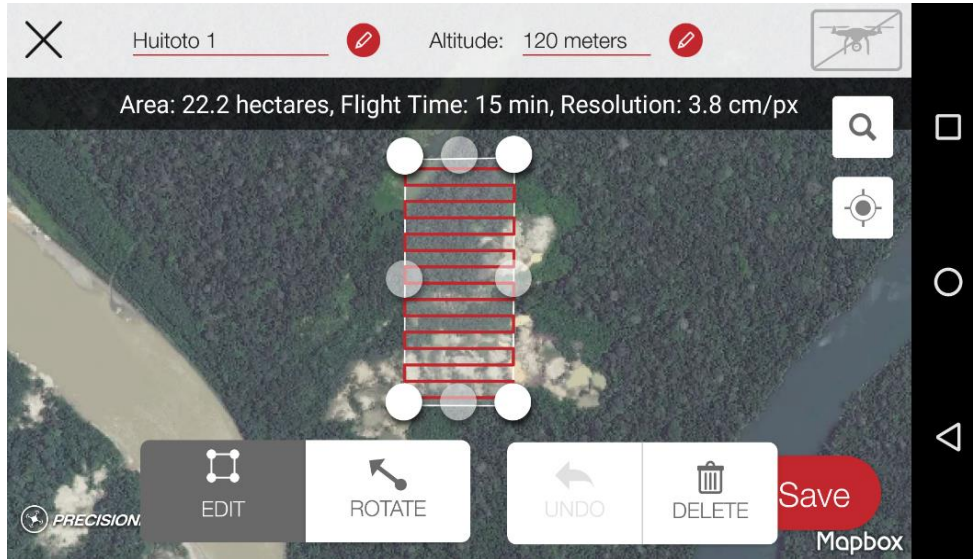


Local scale: Madre de Dios, Peru

- Patrol & monitoring protocols
- Technology & legal training and support
- Gather evidence & file legal claim



Lago Huitoto Ecotourism Concession



ACOMAT
AGENCIA DE CONCESIONES PRIVADAS
COMERCIO Y SERVICIOS AL SECTOR DEL TURISMO

ACTA FINAL DE PATRULLAJE N° 01 -2017-ACOMAT- Sonidos de la Amazonia -MDD

CONCESION : Sonidos de la Amazonia
RESPONSABLE : MARCO VERA (S.A.M.O.V.A)
ASISTENTES : CARLOS CASTAÑEDA (ACCA)
PICCO RIVERO (ACCA)
MILTON JIMENEZ (ACCA)

F. DE RETORNO : 02/03/2017 Hora : 15:30 HRS

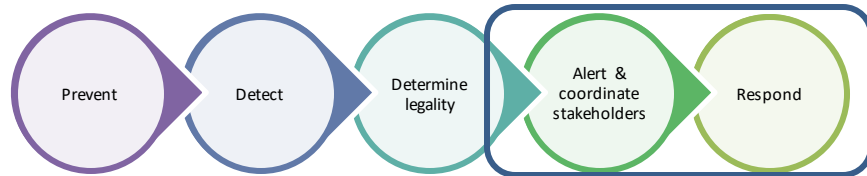
Objetivos verificados	<input checked="" type="checkbox"/> Alertas GLAD <input checked="" type="checkbox"/> Colocado de carteles disuasivos <input checked="" type="checkbox"/> Zonas con amenaza de deforestación <input type="checkbox"/> Cámaras trampa <input checked="" type="checkbox"/> Mantenimiento de Linderos <input type="checkbox"/> Capacidad del personal		
Recorrido realizado	<u>PERA - LABERINTO - HUITOTO - ALDERIVE - ZONA AMENAZADA</u>		
Coordenadas de despegue DRONE	<input checked="" type="checkbox"/> UTM: E <u>393621</u> N <u>8605439</u> <input type="checkbox"/> N/A		
Tiempo de sobrevuelo	<u>5:12</u> <u>16:18</u> <u>16:12</u> <u>12:09</u> <u>22:32</u>	Altitud de sobrevuelo	<u>120m</u>
Velocidad de desplazamiento	<u>8 m/s</u>	Traslape de imágenes (%)	<u>70 %</u>
Resultados del Patrullaje	<u>SE EVITÓ EL COLOCADO DE CARTELES DISUASIVOS</u> <u>SE EMBARCO REQUERIR ACCIONES DE MANTENIMIENTO</u> <u>DE SUS LINDEROS. SE HUBIERON DE SUPERVIGILAR</u>		
Observaciones y compromisos	<u>COMPROMISO DE MANTENIMIENTO DE LINDEROS</u>		
Fecha de cumplimiento	<u>NOV 2017</u>	Medios de verificación	<input checked="" type="checkbox"/> Fotografías georreferenciadas <input type="checkbox"/> Copia de denuncias <input type="checkbox"/> Programa y Registro de participantes de talleres de capacitación. <input type="checkbox"/> Copia de convenios interinstitucionales

Nombre, DNI, firma y huella digital de los asistentes:

MARCO VERA
MILTON JIMENEZ

Coordination & Response

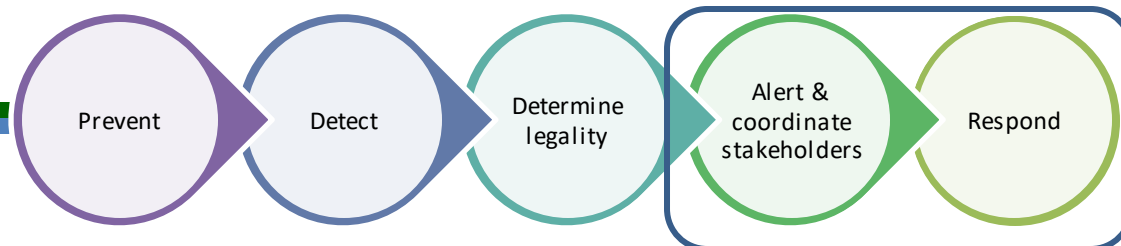
- Action required by multiple government entities with overlapping jurisdictions
- Limited funds & technical resources
- Slow response times
- Limited information sharing
- Requires coordination strategy at national and local scales



Coordination & Response



- Creation of Satellite Monitoring Unit within Environmental Prosecutor Office (FEMA)
- Support interagency coordination via new National System for Control and Surveillance of Forests and Wildlife
- Regulatory changes
- Financing for field interventions
- Next steps with judiciary and environmental police



Conclusions

- Verification and enforcement capacity, coordination & field resources not keeping pace with changes in technology
- Information must be accessible and actionable by diverse stakeholders
- Remote hotspots with difficult access limit prevention and detection actions



Many thanks to our donors



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Google.org

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needs us most

International Conservation Fund of Canada



THANK YOU



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